Part 2.

REVISED MODEL ELEMENTARY ARITHMETIC

H. H. BELFIELD

SECOND PART.

LESSON I.

6		42
12		48
18		54
24		60
30		66
36		72

1. Count the stars in the first column.
2. How many stars in two columns? How many are 6 and 6? How many 6's in 12? How many times is 6 contained in 12? 12 less 6 = ?
3. How many stars in 3 columns? 12 and 6 are how many?
4. How many 6's in 18? What is $\frac{1}{6}$ of 18? 18 less 6 = ? What part of 18 is 3? 6? $6 \times 3 = ?$
5. How many stars in 4 columns? $18 + 6 = ?$ How many 6's in 24? What is $\frac{1}{6}$ of 24? 24 less 6 = ? $6 \times 4 = ?$
6. How many stars in 5 columns? 6 columns? 7 columns? 8 columns? 9 columns? 10 columns? 11 columns? 12 columns?
7. How many 6's in 30? 36? 42? 48? 60? 54? 66? 72?
8. What is $\frac{1}{6}$ of 36? 30? 42? 48? 60? 66? 54? 72?
9. 2 is $\frac{1}{6}$ of what number? 3? 4? 6? 5? 7? 8? 10? 9? 12?
10. Read at sight the sums from left to right, then from right to left. The differences in the same way?

11.	12	24	18	30	42	36	54	48	60	66
	6	6	6	6	6	6	6	6	6	6

60 seconds = 1 minute.
60 minutes = 1 hour.
24 hours = 1 day.

1. Add downward, upward, to the right by lines, to the left:

6	6	6	3	6	6	2	3	4	5
6	2	1	6	4	2	6	6	5	6
6	6	6	1	6	1	6	6	1	2
6	6	6	6	6	6	5	6	3	6
6	6	6	6	6	6	4	1	6	6
1	3	4	5	2	6	6	5	6	3

2. Read the quotients:

$$\frac{24}{6} \quad \frac{18}{6} \quad \frac{36}{6} \quad \frac{12}{6} \quad \frac{42}{6} \quad \frac{60}{6} \quad \frac{54}{6} \quad \frac{66}{6} \quad \frac{72}{6}$$

3. Read the products, sums, and differences:

3	1	2	5	6	9	7	8	4	10	12	11
6	6	6	6	6	6	6	6	6	6	6	6

4. If a box of oranges cost $6, what will 3 boxes cost? 5 boxes? 7 boxes? 8 boxes? 9 boxes? 12 boxes?

5. At $6 a barrel, what part of a barrel of flour can be bought for $1? $2? $4? $5?

6. If one yard of cloth cost $6, what will 4 yards cost?

7. What is $\frac{1}{6}$ of $12? $\frac{2}{6}$? $\frac{3}{6}$? $\frac{4}{6}$? $\frac{5}{6}$?

8. What is $\frac{1}{6}$ of 18 cars? $\frac{2}{6}$? $\frac{3}{6}$? $\frac{4}{6}$? $\frac{5}{6}$?

9. What is $\frac{1}{6}$ of 36 lemons? $\frac{2}{6}$? $\frac{4}{6}$ $\frac{5}{6}$?

10. What is $\frac{1}{6}$ of 30 barrels? $\frac{2}{6}$? $\frac{2}{6}$? $\frac{5}{6}$? $\frac{4}{6}$?

11. What is $\frac{1}{6}$ of 54 bushels? $\frac{2}{6}$? $\frac{3}{6}$? $\frac{4}{6}$? $\frac{5}{6}$?

12. What is $\frac{1}{6}$ of 72 cents? $\frac{2}{6}$? $\frac{4}{6}$? $\frac{3}{6}$? $\frac{5}{6}$?

13. How many seconds in $\frac{1}{6}$ of a minute? $\frac{2}{6}$? $\frac{3}{6}$?

14. How many hours in $\frac{1}{6}$ of a day? $\frac{2}{6}$? $\frac{3}{6}$? $\frac{5}{6}$?

15. What part of a day between 6 o'clock and 12 o'clock?

1. Find the cost of 6 hats, at $5 each.

REMARK. *6 times $5 = cost of the 6 hats = $30, or*
$5 × 6 = $30.

2. Arthur lost 6 marbles, which was $\frac{1}{6}$ of all he had. How many marbles had he?

3. Ida's hat cost $6, and her cloak 3 times as much. How much did the cloak cost? How much did both cost?

4. 6 blocks is what part of 36 blocks?

5. In an orchard are 6 rows of trees, and 8 trees in a row. How many trees in the orchard?

6. At $6 a ton, what will 9 tons of coal cost? 5 tons? 7 tons?

7. If 6 acres of land cost $72, what will 1 acre cost.

REMARK. *$72 ÷ 6 = cost of one acre = $12.*

8. A man received $18 for a week's work. What did he earn in one day?

9. 24 equals how many 6's?   6 is $\frac{1}{6}$ of what number?

10. 12 equals how many 6's?   9 is $\frac{1}{6}$ of what number?

11. 42 equals how many 6's?   11 is $\frac{1}{6}$ of what number?

12. 54 equals how many 6's?   12 is $\frac{1}{6}$ of what number?

13. 13 equals how many 6's?   32 equals how many 6's?

REMARK. *13 = 6 + 6 + 1; therefore, 13 = two 6's and 1 remainder. 32 = 6 + 6 + 6 + 6 + 6 + 2; therefore, 32 = five 6's and 2 remainder.*

14. 25 equals how many 6's?   35 = how many 6's?

15. 57 equals how many 6's?   14 = how many 3's?

16. 19 equals how many 6's?   17 = how many 5's?

17. 28 equals how many 6's?   40 = how many 6's?

18. $\frac{1}{6}$ of 25 weeks? 60 minutes? 18 hours? 30 seconds?

19. $\frac{1}{6}$ of $48? 42 dimes? 54 cents? 72 "nickels"?

20. $\frac{1}{6}$ of 30 lemons? 18 days? 12 trees? 15 books?

21. $\frac{1}{2}$ of 12? $\frac{1}{3}$ of 18? $\frac{1}{4}$ of 24? $\frac{1}{5}$ of 30?

7

1. How many hours in 6 days? 6 hours is what part of a day?
2. Find the cost of one sheep, if 6 sheep cost $24.
3. 6 minutes is what part of an hour?
4. If 6 hogs cost $42, what is the cost of one hog?
5. One man built a fence in 66 days. How many men could have built it in 6 days?
6. Six windows contain 48 panes. How many panes in one window?
7. Cost of 9 pounds of cheese, at 6 cents a pound?
8. Cost of 12 cords of wood, at $6 a cord?
9. Cost of 5 yards of cloth, at $6 a yard?
10. At $6 a barrel, how many barrels of flour can be bought for $72?
11. The interest of $8 is 48 cents. What is it on $1? $2?
12. If the interest on $1 is 6c. What will it be on $9?
13. How many minutes in $\frac{1}{6}$ of an hour? How many hours in $\frac{1}{6}$ of a day?
14. A lady paid $25 for a dress, $6 for a pair of shoes and $6 for a hat. How many dollars did she spend?
15. A man owed a debt of $42; he paid $30. How much did he still owe?
16. A man having $24, paid $6 for a hat. How much had he left?
17. If 6 chickens cost $1, how much will 12 chickens cost? 30 chickens? 48 chickens? 36 chickens? 72 chickens?
18. Six boys earn $1 in one hour. How much will 30 boys earn in the same time? 54 boys? 42 boys? 6 boys in two hours?
19. 24 melons separated into groups of 4 each will make how many groups? How many groups of 6 melons each?

1. Henry bought 6 collars at 8 cents each. He gave the clerk 50 cents. How much in *change* should Henry receive?
2. What cost 6 pounds of butter, at 11 cents a pound?
3. An orchard having 54 trees in 6 rows, has how many trees in a row?
4. There are 72 books on 6 shelves. How many on a shelf?
5. A cow gives 6 quarts of milk twice a day. How much is that in 6 days?
6. If it costs 60 cents to laundry 6 shirts, what will it cost to laundry 1 shirt? 5 shirts?
7. Find the cost of 8 boxes of meat at $6 a box?
8. James had 42 hens. $\frac{1}{6}$ of them died. How many remained alive?
9. I went to the store with 36 cents, and paid out all but 30 cents. What part of my money did I spend?
10. One pair of boots is what part of 12 boots?

COPY AND FIND THE PRODUCTS.

1.	*2.*	*3.*	*4.*
15 cards	35 sheets	6 tacks	$125
3	4	5	6

5.	*6.*	*7.*	*8.*
48 needles	89 cups	76 tools	$125
5	6	4	5

7
14
21
28
35
42

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49
56
63
70
77
84

1. Count the stars in one column.
   How many are 7 and 7? How many 7's in 14?
   What is $\frac{1}{2}$ of 14? $\frac{1}{7}$ of 14? $7 \times 2 = ?$
   How many times is 7 contained in 14? 14 less 7 = ?

2. How many stars in 3 columns? 14 and 7 = ?
   How many 7's in 21? What is $\frac{1}{3}$ of 21?
   What is $\frac{1}{7}$ of 21? How many times can you take 7 from 21?
   How many times is 7 contained in 21? $7 \times 3 = ?$
   What part of 21 is 3? 7 is what part of 21?

3. How many stars in 4 columns? 5 columns? 6 columns?
   7 columns? 8 columns? 9 columns? 10 columns? 11
   columns? 12 columns?

4. How many are 21 and 7? 28 and 7? 7 + 35? 7 + 42?
   56 and 7? 63 and 7? 77 and 7? 70 and 7? 49 and 7?

5. How many 7's in 14? 21? 28? 35? 42? 49? 56? 63?
   70? 77? 84?

6. What is $\frac{1}{7}$ of 21? 14? 35? 28? 42? 70? 49? 56? 63?
   79? 84? 77?

7. 4 is $\frac{1}{7}$ of what number? 2? 3? 5? 6? 8? 7? 9? 11?
   12? 10? 1? 4?

8. Read at sight the sums from left to right, then right to
   left. Name the differences in the same order.

21	14	35	28	42	56	49	84	77	63
7	7	7	7	7	7	7	7	7	7

7 days   = 1 week.
4 weeks   = 1 month (nearly).
12 months = 1 year.

1. Add rapidly downward, upward, to the right, to the left:

7	7	7	6	4	5	3	2	7	7
7	7	1	2	3	4	5	6	7	7
7	7	5	6	7	3	7	5	4	3
7	6	4	7	7	7	6	7	5	4
7	5	6	4	5	7	7	7	6	5
7	7	7	7	6	6	4	3	7	6
7	4	3	3	2	2	7	4	7	1

2. Name the quotients at sight:

$$\frac{14}{7} \quad \frac{28}{7} \quad \frac{56}{7} \quad \frac{21}{7} \quad \frac{42}{7} \quad \frac{84}{7} \quad \frac{35}{7} \quad \frac{70}{7} \quad \frac{63}{7}$$

3. Name the products, sums, differences:

$$\frac{5}{7} \quad \frac{4}{7} \quad \frac{6}{7} \quad \frac{3}{7} \quad \frac{7}{7} \quad \frac{8}{7} \quad \frac{10}{7} \quad \frac{12}{7} \quad \frac{11}{7} \quad \frac{9}{7} \quad \frac{2}{7} \quad \frac{1}{7}$$

4. 14 equals how many 7's? $\frac{1}{7}$ of 28 equals what?

5. 56 equals how many 7's? $\frac{1}{7}$ of 35 equals what?

6. 84 equals how many 7's? $\frac{1}{7}$ of 63 equals what?

7. 49 equals how many 7's? $\frac{1}{7}$ of 77 equals what?

8. 15 equals how many 7's? 9 is $\frac{1}{7}$ of what number?

9. 25 equals how many 7's? 8 is $\frac{1}{7}$ of what number?

10. 47 equals how many 7's? 5 is $\frac{1}{7}$ of what number?

11. 80 equals how many 7's? 7 is $\frac{1}{7}$ of what number?

12. 49 is how many more than 35? Than 28?

13. 67 is how many more than 47? Than 63?

14. 13 is how many less than 56? Than 49?

15. 20 is how many less than 84? Than 70?

1. If a pair of boots cost $7, what will 4 pairs cost? 8 pairs?

2. There are six working days in a week. How much will a man receive for one week's work at $7 a day?

3. At $7 a yard, what will 5 yards of cloth cost? 11 yards? 3 yards?

4. If a barrel of flour cost $7, what will 2 barrels cost? 4 barrels? 12 barrels?

5. A bushel of clover seed is worth $7. How many bushels can be bought for $49? $56? $21? $42? $63? $77?

6. What is $\frac{1}{7}$ of 14 barrels? $\frac{2}{7}$? $\frac{3}{7}$? $\frac{6}{7}$? $\frac{5}{7}$? $\frac{4}{7}$? $\frac{7}{7}$?

7. One day is what part of one week? 5 days? 4 days?

8. A boy spends 7 hours of a day in study, 7 hours in play, and sleeps the remaining time. How many hours does he sleep?

9. A woman received 63 cents for making overalls at 9 cents a pair. How many pairs did she make?

10. A man bought a stove for $35; he paid for it at the rate of $5 a week. How many weeks was he in paying for it?

11. Johnson paid $7 for a vest, and 3 times as much for the coat. How much did the coat cost?

12. Clara bought a paper of 72 pins, and gave away 7. How many pins had she left?

13. 59 dollars is 7 dollars less than what was paid for a sleigh. How much was paid for the sleigh?

14. $\frac{1}{7}$ of 35 weeks? 49 hours? 14 months? 63 days?

15. $\frac{1}{7}$ of $56? $28? $56? 77 cents? 21 "nickels"?

16. $\frac{1}{7}$ of 49 trees? 84 men? 7 houses? 42 cars?

17. 42 are how many 5's? How many 4's? 6's?

18. 63 are how many 10's? How many 11's? 7's? 8's?

1. $85 + 7 = ?$ $129 - 57 = ?$ $37 \times 8 = ?$ $497 \div 7 = ?$

2. $\frac{1}{7}$ of 490 sheep, at $3 each? $4 each?

3. $840 were equally distributed among 7 children. How much did each child receive?

4. James writes 7 lines in his copy-book each day. In how many days will he write 56 lines?

5. One man owes me $45, another owes me $7, and another $6. How much do the three men owe me?

6. Albert is 7 years old and his father is 5 times as old. What is the sum of their ages?

7. A tailor's house rent is $6 a month and his shop rent $3. How much rent does he pay in one year?

8. Rufus picks 8 bushels of apples in one hour and Harry 7 bushels. How much do both pick in 8 hours?

9. How many months in 7 years and 7 months?

10. If a girl earns 70 cents in 10 hours, how much will she earn in 6 hours? In 15 hours?

11. At $7 an acre, how many acres can be bought for $77? For $84? For $210?

12. What cost $\frac{1}{7}$ of 63 yards of cloth at $6 a yard?

13. 7×4, and $6 = ?$ $49 \div 7$, less $7 = ?$ $7 \times 12 = ?$

14. The front wheels of a carriage have 12 spokes each and the hind wheels have each 14 spokes. How many spokes has the carriage?

15. On a certain street there are 48 numbers to a block. How many numbers to 7 such blocks?

16. One bag of barley weighs 84 pounds. How much will $\frac{1}{7}$ of a bag weigh?

17. A man had 56 cows; he gave $\frac{1}{7}$ of them to his son. How many had he left?

18. How many are $\frac{2}{7}$ of 35? $\frac{5}{7}$? $\frac{4}{7}$? $\frac{6}{7}$?

19. What is the value of 7 bushels of wheat, at 87c. a bushel?

1. If one bushel of chestnuts is worth 7 dollars, how much are 9 bushels worth?

2. How many barrels of flour, at 7 dollars a barrel, may be bought for 56 dollars?

3. How much is paid for a quantity of corn that costs 11 times 7 dollars and 5 dollars more?

4. 63 acres is 7 times what a farmer has planted in wheat. How many acres of wheat has he?

5. One seventh of 77 years is George's age. How old is George?

6. There are 12 inches in one foot. How many inches are there in a line 7 feet long?

7. How much is the rent of a house a month for which there is paid 9 times 7 dollars and 6 dollars more?

8. 61 dollars is 5 dollars more than what 7 tons of coal cost. What is the price of one ton?

9. Mr. Jackson had 7 cows and they averaged each 9 pounds of butter per week. How many pounds of butter did he make in one week?

10. A farmer had all but $\frac{1}{8}$ of 72 acres in wheat. How many acres of wheat had he?

11. In the morning the wind blew at the rate of 7 miles an hour, in the afternoon during a hurricane the rate was increased to 56 miles an hour. How many times faster did it blow in the afternoon?

12. Ames receives 70 cents a day. What will he be paid for $\frac{1}{7}$ of a day?

13. How many are 4×7? 5×6? 9×5? 6×8? 7×9? 9×6?

14. Fred earns 7 cents an hour. How much will he earn in 12 hours?

15. 12 times $\frac{1}{4}$ of $63 equal how much money?

A BOY'S CASH ACCOUNT.

1887.		Cash, March, 1887.	Received.	Paid.
Mar.	1	Cash on hand	7 85	
"	4	Sold 5 doz. eggs, @ 25ᶜ	1 25	
"	5	Bought 3 books, @ 45ᶜ		1 35
"	8	Sold 2 hens, @ 55ᶜ		
"	15	" 7 doz. eggs, @ 25ᶜ		
"	16	Bought 75 lb. feed, @ 1ᶜ		
"	16	" U. S. History		75
"	25	For running errands	50	
"	26	Sold my skates	1 75	
		Balance		11 35
			14 20	14 20

INSTRUCTIONS.—Money received is entered in column marked "Received." Money paid is entered in column marked "Paid." At the close of the month find the sum of each column, and subtract the amount *paid* from the amount *received.* Enter the difference as "Balance" in column "Paid," and find sum of each column. The "Balance" is entered as "Cash on hand" on the first day of the next month.

8		56
16		64
24		72
32		80
40		88
48		96

1. How many stars in one column? In two columns?
   How many are 8 and 8? How many 8's in 16?
   What is $\frac{1}{2}$ of 16? 16 less 8 = ?
   How many are two times 8? What is $\frac{1}{8}$ of 16?
2. How many stars in 3 columns? 16 and 8? 3 times 8?
   How many times is 8 contained in 24? 3 is what part of 24?
3. How many stars in 4 columns? 5? 6? 7? 8? 9? 10? 11? 12?
4. How many 8's in 16? 24? 32? 40? 48? 56? 64? 72? 80? 88? 96?
5. What is $\frac{1}{8}$ of 24? 32? 48? 96? 64? 56? 72? 88? 40?
6. Six is what part of 48? 7 of 56? 7 of 49? 10 of 80? 12 of 96?
7. One is $\frac{1}{8}$ of what number? 2? 4? 8? 3? 6? 12? 7?
8. How many times is 8 contained in 32? 24? 40? 56? 64? 72? 96?
9. Read at sight the sums from left to right; from right to left.
10. Read differences in same manner:

32	24	16	48	56	72	64	88	80	40
8	8	8	8	8	8	8	8	8	8

1. Name the quotients:

$$\frac{40}{8} \quad \frac{64}{8} \quad \frac{72}{8} \quad \frac{32}{8} \quad \frac{56}{8} \quad \frac{88}{8} \quad \frac{48}{8} \quad \frac{96}{8} \quad \frac{24}{8}$$

2. Name the products, sums, differences:

1	2	5	4	6	3	7	8	10	9
8	8	8	8	8	8	8	8	8	8

3. Add downward, upward, to the right, to the left:

8	8	8	8	8	8	8	8	8	8
8	7	8	6	5	8	1	8	7	3
8	6	7	4	8	6	2	8	7	3
8	5	8	2	8	5	3	8	6	5
8	4	3	7	6	7	4	8	6	5
8	3	4	5	8	3	5	5	4	8
8	2	8	8	7	8	6	6	4	8
7	1	6	8	6	8	7	8	3	7

4. $5 = \frac{1}{8}$ of what? What is $\frac{1}{8}$ of 96? $\frac{1}{8}$ of 72?
5. $9 = \frac{1}{8}$ of what? What is $\frac{1}{8}$ of 32? $\frac{1}{8}$ of 48?
6. $3 = \frac{1}{8}$ of what? What is $\frac{1}{8}$ of 64? $\frac{1}{8}$ of 88?
7. $7 = \frac{1}{8}$ of what? What is $\frac{1}{8}$ of 8? $\frac{2}{8}$ of 40?
8. $11 = \frac{1}{8}$ of what? What is $\frac{1}{8}$ of 80? $\frac{3}{8}$ of 56?

9. 25 equals how many 8's? How many 8's in 43?
10. 76 equals how many 8's? How many 8's in 39?
11. 45 equals how many 8's? How many 8's in 89?
12. 37 equals how many 8's? How many 8's in 50?
13. 60 equals how many 8's? How many 8's in 70?
14. 400 equals how many 8's? How many 8's in 560?
15. 328 equals how many 8's? How many 8's in 818?
16. 287 equals how many 7's? How many 7's in 350?
17. 426 equals how many 6's? How many 6's in 540?

1. How many pints in 2 quarts?   5 quarts?   12 quarts?
2. 18 pints equal how many quarts?
3. Horace earned 56 cents, and gave 8 of them for a lead pencil.   How much had he left?
4. Julia planted 65 seeds, and Mary planted 8 less than Julia.   How many did Mary plant?
5. There are 9 square feet in one square yard.   How many square feet are there in 8 square yards?
6. If a person work 8 hours each day, how many hours will he work in 12 days?
7. A boy was asked how many marbles he had, and replied that if he had 8 times as many, he would have 96. How many marbles had he?
8. If a ship sails 8 miles an hour, in what time, at the same rate, will she sail 88 miles?
9. One eighth of 72 dollars is what a gentleman paid for 2 tickets to the opera.   How much did they cost?
10. $8 \times 4 = ?$ $8 \times 7 = ?$ $64 \div 8 = ?$ $96 \div 8 = ?$ $24 \div 8 = ?$
11. If 8 sheep cost $88, what will one sheep cost?
12. What is the value of $\frac{1}{8}$ of 72 acres at $6 an acre?
13. At $12 a month, what is the rent of a house for 8 months?
14. A boy receiving $12 a week, spends $4 for board.   How much does he save in 8 weeks?
15. A man, being asked the value of his horse, said, one eighth of its value is $10.   What was the horse worth?
16. A boy's coat cost $8 which was $\frac{1}{7}$ of his money.   How much had he?
17. Mabel is 24 years old, and her sister's age is $\frac{2}{8}$ of hers. How old is her sister?

pt. = pint; qt. = quart; pk. = peck.

1. How many quarts in one peck?   2 pecks?   5 pecks? 7 pecks?   6 pecks?   9 pecks?   10 pecks?   12 pecks?
2. At 8 cents a quart, what will 6 quarts of cranberries cost?
3. Paid $56 for 8 tons of coal.   How much was that a ton?
4. A boy can run 9 miles in two hours and a dog can run 8 times as fast.   How many miles can the dog run in the same time?
5. If 5 men can do a piece of work in 8 days, in how many days can one man do it?
6. If board is $12 a month, what is it for 8 months?
7. How much is hay per ton, if $88 is paid for 8 tons?
8. Bought 8 pounds of coffee for 96 cents.   How much was that a pound?
9. If a horse is fed 1 peck a day, how many weeks will 28 pecks last?
10. Twelve quarts of strawberries at 8 cents a quart = ?
11. If 8 men receive $64 for a piece of work.   What does each receive?
12. How many pecks in 32 quarts?   72 quarts?   56 quarts?
13. Two quarts of milk a day, at 4 cents a quart, cost how much for one week?
14. What is the cost of a quart of beans, if a peck is worth 48 cents?
15. What is the cost of one pound of tea, if 3 pounds cost 75 cents?

9 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ 63
★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
18 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ 72
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27 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ 81
★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
36 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ 90
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45 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ 99
★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
54 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ 108

1. How many stars in one column?　In two columns?
How many are 9 and 9?　How many are two 9's?
What is $\frac{1}{2}$ of 18?　$\frac{1}{9}$ of 18?　2 is what part of 18?

2. How many stars in 3 columns?　$9 + 9 + 9 = ?$
How many 9's in 27?　What is $\frac{1}{3}$ of 27?

3. How many stars in 4 columns?　5 columns?　6 columns?
7 columns?　8 columns?　9 columns?　10 columns?　11
columns?　12 columns?

4. How many 9's in 18?　27?　36?　45?　63?　54?　72?　90?
81?　99?　108?

5. Two is $\frac{1}{9}$ of what number?　3?　5?　7?　9?　11?　12?　4?
6?　8?　10?　1?

6. Read the sums, then the differences, as before directed:

18	36	42	108	90	86	54	45	29
9	9	9	9	9	9	9	9	9

7. Name the quotients at sight:

$$\frac{27}{9} \quad \frac{9}{9} \quad \frac{36}{9} \quad \frac{45}{9} \quad \frac{81}{9} \quad \frac{72}{9} \quad \frac{108}{9} \quad \frac{99}{9} \quad \frac{54}{9}$$

1. Name the products, sums, differences:

4	5	7	6	9	8	5	3	10	12	11
9	9	9	9	9	9	9	9	9	9	9

2. Add downward, upward, rightward, leftward:

9	9	9	9	9	9	9	9	9	9
8	9	7	6	9	4	3	2	1	3
7	8	9	6	5	9	9	8	9	4
6	9	7	9	9	4	3	9	1	6
5	8	9	6	9	9	9	2	9	5
4	9	7	9	5	9	3	9	1	8
3	8	9	6	9	4	9	2	9	7
2	9	7	9	5	9	3	9	1	9
1	8	9	6	9	4	9	2	9	8

3. $3 = \frac{1}{9}$ of what?　What is $\frac{1}{9}$ of 36?　$\frac{2}{9}$ of 18?

4. $7 = \frac{1}{9}$ of what?　What is $\frac{1}{9}$ of 45?　$\frac{3}{9}$ of 54?

5. $9 = \frac{1}{9}$ of what?　What is $\frac{1}{9}$ of 72?　$\frac{4}{9}$ of 27?

6. $11 = \frac{1}{9}$ of what?　What is $\frac{1}{9}$ of 81?　$\frac{5}{9}$ of 63?

7. $6 = \frac{1}{9}$ of what?　What is $\frac{1}{9}$ of 108?　$\frac{8}{9}$ of 88?

8. How many 9's in 27?　18?　99?　54?

9. How many 9's in 30?　40?　55?　89?

10. How many 2's in $\frac{1}{9}$ of 108?　3's?　4's?　5's?　6's?　7's?

11. 63 are how many 9's?　8's?　7's?　6's?　5's?　4's?　3's?

12. 50 are how many 9's?　8 is what part of 72?

13. 69 are how many 9's?　12 is what part of 108?

14. 75 are how many 9's?　9 is what part of 81?

15. 95 are how many 9's?　11 is what part of 99?

16. 57 are how many 9's?　7 is what part of 63?

17. $85 are how many $10 bills?　$5 is what part of $60?

18. $58 are how many $5 bills?　$10 is what part of $70?

19. $93 are how many $1 bills?　$9 is what part of $81?
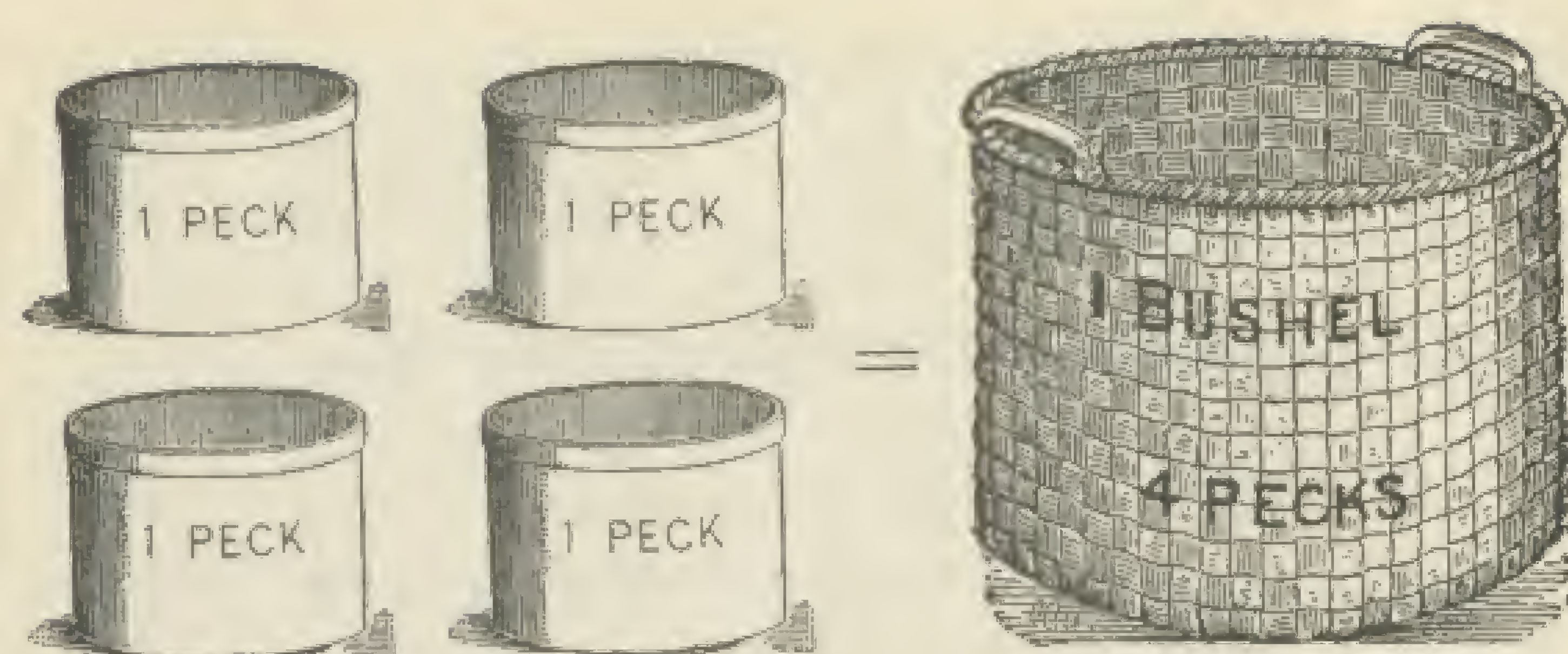
1. James has 69 pecks of corn in one box, and 9 pecks in another. How many pecks of corn are there in the two boxes?

2. Mary had 76 pinks in her garden, and 9 of them were destroyed. How many had she left?

3. A farmer has 12 bushels of wheat, and 9 times as many bushels of oats. How many bushels of grain has he?

4. How much more oats has he than wheat?

5. Of the pupils of a school 6 were absent, and 9 times as many were present. How many were present? How many belonged to the school?

6. At 9 cents a peck, how much will 2 bushels of oats cost?

7. At $9 a bushel, how many bushels of clover seed can be bought for $99?

8. If 9 men can pick 108 bushels of apples in one day, how many bushels can one man pick?

9. What is one quart of beans worth if 9 quarts are worth 72 cents?

10. One ninth of 63 dollars is what John paid for a pair of boots. What did the boots cost?

11. A gentleman earned 9 dollars a day for 8 days, and spent 8 dollars a day for 8 days. How much has he left?

1. At 7 cents a yard, what will 9 yards of ribbon cost?

2. What will 9 cords of wood cost at $5 a cord?

3. The cost of 4 dozen eggs at 9 cents a dozen?

4. Eight books at 9 cents each will cost how much?

5. How long will it take one man to do the work that 9 men do in 11 days?

6. How many sheep can I buy for $96 at $8 each?

7. I have 9 dozen buttons, and need 88 buttons. How many will be left? What did I pay for all of them at 6 cents a dozen?

8. Mr. Hudson had $99. He gave Harold $\frac{1}{9}$ of it and George $\frac{1}{3}$. How much had he left?

9. How many feet in 9 yards? 8 yards? 7 yards? 6 yards?

10. How many feet in 108 inches? In 98 inches?

11. What is the cost of 6 feet of molding, if 9 feet cost 81 cents?

12. How many inches in 3 yards of lead pipe?

13. Willliam earns $\frac{1}{9}$ as much money as his father does, whose wages are $63 a month. How much does William earn?

14. Jane has 11 dollars, and her father has 9 times as much and 8 dollars more. How many dollars has her father? How many dollars have both?

15. Jennie's grandfather is 72 years of age, and she is one-ninth as old. How old is Jennie? In how many more years will she be 17 years old?

16. One seventh of 84 dollars is 3 times the cost of my chair. How much did my chair cost?

17. Sold 12 barrels of flour, worth 6 dollars a barrel, for 69 dollars. How many dollars did I lose?

18. How much more than 46 dollars should a gentleman have in order to buy 12 cords of wood at 5 dollars a cord?

8

REVIEW—ORAL.

1. How many are three 6's? Six 3's? Four 7's? Seven 5's? Eight 4's? Five 9's? Ten 6's? Six 9's? Eleven 6's? Six 12's? Seven 9's?
2. What is $\frac{1}{6}$ of 18? 30? 48? 36? 54? 42? 72?
3. What is $\frac{1}{7}$ of 28? 21? 42? 56? 49? 63? 84?
4. What is $\frac{1}{8}$ of 24? 32? 48? 64? 56? 72? 96?
5. What is $\frac{1}{9}$ of 36? 18? 72? 99? 81? 63? 45?
6. 3 is what part of 24? Of 21? Of 15? Of 36?
7. $\frac{1}{6}$ of what number is 4? Is 8? Is 9? Is 12?
8. $\frac{1}{7}$ of 35 are how many? $\frac{2}{7}$? $\frac{3}{7}$? $\frac{5}{7}$? $\frac{6}{7}$?
9. 54 are how many 6's? 9's? 5's? 7's? 8's? **10's?**
10. 8 what are 24? 40? 72? 96? 64? 56?

LESSON XXI.

REVIEW—WRITTEN.

1. Find the cost of 175 pounds of rice at 7c. a pound.
2. What is the cost of 7 building lots at $1,345 each?
3. Nine pounds of butter at 28c. a pound cost how much money?
4. A certain line of telegraph cost $985 a mile; what did 6 miles of it cost?
5. At $158 an acre, what cost 7 acres?
6. The cost of one house is $1,290. Required the cost of 8 such houses?
7. A steamer sails 275 miles a day. How far will she sail in 9 days?
8. What is a man's income in 6 years at $2,385 a year?
9. Add the product of 497 and 6, to 3,841.
10. Find the cost of 8 chaises at $218 each.

1. How many stars in 1 column? Two columns?
2. Ten and 10 are how many? 20 less 10?
3. How many 10's in 20? What is $\frac{1}{10}$ of 20?
4. How many 10's in 30? 40? 50? 60? 70? 80? 90? 100? 110? 120?
5. What is $\frac{1}{10}$ of 10? 20? 40? 30? 50? 60? 80? 70? 90? 110? 100? 120?
6. 3 is $\frac{1}{10}$ of what? 4? 5? 7? 9? 8? 6? 10? 12? 11?
7. What is $\frac{1}{10}$ of 20 mills? 40 cents? 70 dimes? $90?
8. 10 cts. = what part of a dollar? 40 cts.? 50 cts.? 80 cts.?
9. What is $\frac{1}{10}$ of a dollar? $\frac{3}{10}$? $\frac{4}{10}$? $\frac{6}{10}$? $\frac{7}{10}$? $\frac{9}{10}$?
10. If a man works 10 hours a day, how many hours does he work in one week, not including Sunday?
11. At $10 a head what will 11 head of cows cost?
12. How many cents in $1? $2? How many inches in 10 feet?
13. Mr. Reed had 70 sheep; wolves killed $\frac{2}{10}$ of them. How many were left?
14. If 10c. are paid for the use of $1, how much must be paid for the use of $6? $8? $11? $12? $\frac{1}{2}$?
15. How many men are required to dig a trench in 10 days that one man can dig in 110 days?

11	33	55	77	99	121
22	44	66	88	110	132

1. How many are 11 and 11? 22 and 11? 33 and 11?
2. How many 11's in 22? 33? 44? 55? 66? 77? 88? 99? 110? 121? 132?
3. What is $\frac{1}{11}$ of 33? 44? 66? 55? 99? 121? 132?
4. $\frac{1}{11}$ of 22 equals what? $\frac{2}{11}$? $\frac{3}{11}$? $\frac{5}{11}$? $\frac{10}{11}$? $\frac{9}{11}$?
5. 4 is $\frac{1}{11}$ of what number? 3? 5? 10? 12? 11?
6. $\frac{1}{11}$ of 66 desks? 44 feet? 77 inches? $121?
7. $\frac{1}{11}$ of 22 sheep at $7 each? $\frac{2}{11}$ of them at $9 each?
8. I paid $110 house rent, and $\frac{1}{11}$ as much for gas. How much did I pay for both?
9. 3 loads of hay will winter one cow. How many cows will 33 loads winter?
10. Isaac planted 132 seeds in 11 hills. How many seeds did he put into one hill?
11. How many days in 11 weeks and 4 days?

12. 55 equals how many 11's? $\frac{1}{11}$ of 33 equals what?
13. 66 equals how many 11's? $\frac{1}{11}$ of 121 equals what?
14. 110 equals how many 11's? $\frac{1}{11}$ of 99 equals what?
15. 132 equals how many 11's? $\frac{1}{11}$ of 77 equals what?
16. 35 equals how many 11's? 23? 19? 47? 81?
17. 116 equals how many 11's? 67? 76? 130? 113?

18. How many are $\frac{44}{11}$ and 9? $\frac{66}{6}$ and 8? $\frac{110}{10}$ and 7?
19. Eleven times 7 less 4? 11×6 less 20? 11×10 less $6?
20. Find the cost of $\frac{1}{11}$ of 55 cows, at $12 each.
21. At $12 each, what is the cost of 11 coats?
22. If all but $\frac{1}{11}$ of $99 be divided among 3 persons, how many dollars will each receive?
23. What is the price of $\frac{3}{11}$ of 121 cords of wood, at $5 a cord?

12	36	60	84	108	132
24	48	72	96	120	144

1. How many 12's in 24? 36? 48? 60? 72? 84? 96? 108? 120? 132? 144?
2. What is $\frac{1}{12}$ of 24? 48? 60? 36? 72? 96? 144? 132? 108? 84? 120?
3. 3 is $\frac{1}{12}$ of what number? 5? 4? 7? 6? 9? 8? 10? 11? 12?
4. 24 = how many 12's? 11's? 9's? 8's? 7's? 6's? 5's? 4's?
5. 35 = how many 12's? 11's? 9's? 8's? 7's? 6's? 5's? 4's?
6. 72 = how many 12's? 11's? 10's? 9's? 7's? 6's? 5's? 8's?
7. $\frac{36}{12}$ and 8? $15 + \frac{60}{12}$? 29 less $\frac{84}{12}$? $\frac{132}{11} + 6$?
8. $\frac{1}{12}$ of $96? $144? $120? $72? $48? $132?
9. $\frac{1}{12}$ of 60 books? $\frac{3}{12}$? $\frac{1}{11}$ of 121 sheep? $\frac{1}{9}$ of 72 cows?
10. $\frac{1}{12}$ of 36 acres, at $11 an acre, equals what?
11. $\frac{1}{11}$ of 77 cows, and 3 cows, at $12 each, equals what?
12. $132 \div 11 = ?$ $11 \times 11 = ?$ $12 \times 7 = ?$ $96 \div 8 = ?$

13. James is 12 years old, and his father is 4 times as old and 11 years more. How old is his father?
14. How many feet in 132 inches? In 12 yards?
15. A ship sailing 120 miles in 10 hours, sailed how much in 1 hour?
16. Edna bought 7 yards of cambric at 12c. a yard and had 9c. left. How much money had she?
17. There are 6 rows of 12 desks each and 4 side desks in a school-room. How many pupils can be seated?
18. Perry is 12 years old; Aaron is $\frac{5}{6}$ as old. What is the age of Aaron?
19. The fuel for the house costs $60, and for the store $\frac{5}{12}$ of that amount. What is the cost of fuel for the store?

1 PECK   1 PECK   =   HALF BUSHEL 2 PECKS
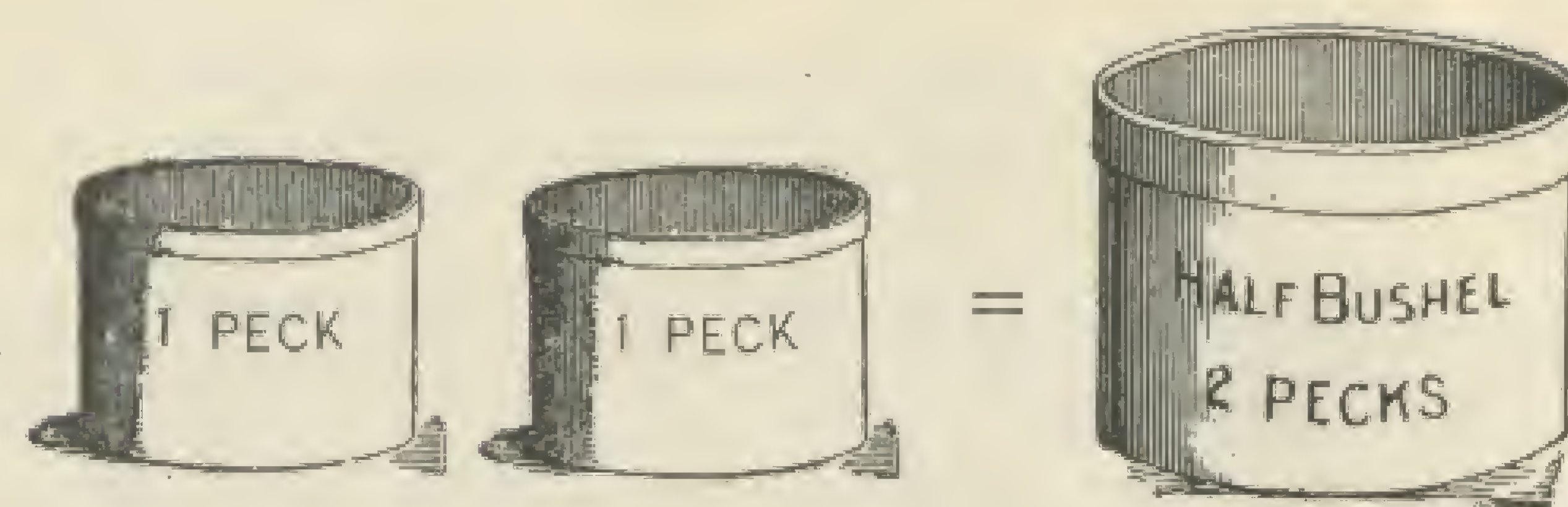
1. A butcher paid $6 each for 11 calves, and $4 for bringing them to his yard. How much did the calves cost him?
2. How many bags, each holding 2 bushels, are required to contain 22 bushels of wheat?
3. At 11c. a pound, how much meat can be bought for 77c.?
4. How many pecks in $\frac{1}{11}$ of 55 bushels? $\frac{1}{11}$ of 121 bushels?
5. A man had 11 $10 bills with which to pay a debt of $103. How much had he left after payment?
6. The distance around a square is equal to 3 times 12 inches. How many inches on one side of the square?
7. There are 24 sheets of paper in a quire. How many sheets in $\frac{1}{4}$ a quire? In three-halves?
8. If the price of 12 tons of coal is given, how do you find the price of one ton? Of 7 tons?

9. 48 equals how many 12's? 8's? 6's? 4's?
10. 72 equals how many 12's? 9's? 8's? 6's?
11. 38 equals how many 12's? 11's? 10's? 9's? 8's?
12. 60 equals how many 12's? 11's? 10's? 9's? 8's?
13. 42 equals how many 12's? 11's? 10's? 9's? 8's?
14. 62 equals how many 12's? 11's? 10's? 9's? 8's?

15. How many 12's in 90? In 100? In 120? In 140?
16. How many 11's in 90? In 110? In 115? In 80?
17. How many dimes in $1.20? In $1.80? In $2.50? In $5? In a $10 bill?

1. ( ) times ( ) are 6.
2. ( ) times ( ) are 8.
3. ( ) times ( ) are 9.
4. ( ) times ( ) are 10.
5. ( ) times ( ) are 12.
6. ( ) times ( ) are 14.
7. ( ) times ( ) are 15.
8. ( ) times ( ) are 16.
9. ( ) times ( ) are 18.
10. ( ) times ( ) are 20.
11. ( ) times ( ) are 21.
12. ( ) times ( ) are 22.
13. ( ) times ( ) are 24.
14. ( ) times ( ) are 25.
15. ( ) times ( ) are 27.
16. ( ) times ( ) are 28.
17. ( ) times ( ) are 30.
18. ( ) times ( ) are 32.
19. ( ) times ( ) are 33.
20. ( ) times ( ) are 35.
21. ( ) times ( ) are 36.
22. ( ) times ( ) are 40.
23. ( ) times ( ) are 42.
24. ( ) times ( ) are 44.
25. ( ) times ( ) are 45.
26. ( ) times ( ) are 48.

27. ( ) times ( ) are 49.
28. ( ) times ( ) are 50.
29. ( ) times ( ) are 54.
30. ( ) times ( ) are 55.
31. ( ) times ( ) are 56.
32. ( ) times ( ) are 60.
33. ( ) times ( ) are 63.
34. ( ) times ( ) are 64.
35. ( ) times ( ) are 66.
36. ( ) times ( ) are 70.
37. ( ) times ( ) are 72.
38. ( ) times ( ) are 77.
39. ( ) times ( ) are 80.
40. ( ) times ( ) are 81.
41. ( ) times ( ) are 84.
42. ( ) times ( ) are 88.
43. ( ) times ( ) are 90.
44. ( ) times ( ) are 96.
45. ( ) times ( ) are 99.
46. ( ) times ( ) are 100.
47. ( ) times ( ) are 108.
48. ( ) times ( ) are 110.
49. ( ) times ( ) are 120.
50. ( ) times ( ) are 121.
51. ( ) times ( ) are 132.
52. ( ) times ( ) are 144.

1. 12 equals how many 6's? 4's? 3's? 2's?
2. 16 equals how many 8's? 4's? 2's?
3. 18 equals how many 9's? 6's? 3's? 2's?
4. 20 equals how many 10's? 5's? 4's? 2's?
5. 36 equals how many 12's? 9's? 6's? 4's? 3's?

DRILL TABLE.

A.	6's?	7's?	8's?	9's?	10's?	11's?	12's?
1	6	14	40	9	50	11	110
3	48	28	24	36	40	44	96
2	24	7	16	18	20	99	48
5	36	21	32	27	90	55	24
7	12	35	56	45	10	77	72
4	30	56	48	36	80	66	36
6	42	49	8	90	100	88	12
10	54	63	80	108	70	33	144
12	66	84	96	54	120	110	120
9	18	70	64	63	30	22	84
11	60	77	72	99	60	132	60
8	72	42	88	72	110	121	108

Thoughtful practice secures both speed and accuracy.

1. ADD, at sight, column *A*. Add each number in column *A*, to 12. Add each of the digits to each number in the other columns. By columns, give the sum of each number and the one below it; after considerable practice each number and two below it may be taken.
2. SUBTRACT each number in *A* from each number in all other columns, passing by lines from left to right.
3. MULTIPLY each number in *A* by 2; by 3, 4, etc., to 12; then by 20, 30, etc. to 90.
4. Name the number of 6's in 2d column; 7's in 3d column, etc.
5. Name the number of 6's in 3d column, etc., reading only the quotients and remainders.

Other ways of naming results may be devised.

$$100 + 10 + 6 = 116.$$

NOTATION AND NUMERATION.

1. How many stars in column C? Column B? In column B and C? Write each number?
2. How many columns in group A? How many stars in each column? How many are 10 times 10? How many 10's in 100? How many *ones* or *units* in 10?
3. How do you write the sum of B and C? A and B? A, B and C?
4. What may be placed at the right of 6 to make a number ten times as large? One hundred times as large?
5. What is the effect of changing a figure from units' place to tens' place? What is the effect of moving a figure from tens' place to hundreds' place?
6. Write 3 in hundreds' place and 4 in units' place. In this case what do you write in tens' place to show that 3 is in hundreds' place?
7. 12 is 10 and 2 = one ten and 2 units.
8. 21 is 20 and 1 = two tens and one unit.
9. 99 is 90 and 9 = nine tens and nine units.

PERIODS, - - -			Millions.			Thousands.			Units.
ORDERS, - - -	9th. Hundred-millions.	8th. Ten-millions.	7th. Millions.	6th. Hundred-thousands.	5th. Ten-thousands.	4th. Thousands.	3d. Hundreds.	2d. Tens.	1st. Units.
							4	0	5
						3	4	5	0
					4	6	0	2	3
				8	0	5	1	3	2
			2	4	0	5	4	0	0
		7	5,	0	6	0,	0	6	0
	6	4	5,	3	2	8,	7	8	3

The characters used in ARABIC NOTATION are the figures 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. The first of these is called *zero*, *naught*, or *cipher*, and represents no value.

1. In writing large numbers *separate the periods of figures by a comma.*
2. 223 is 200, 20 and 3 = two hundreds, two tens, and 3 units.
3. 405 is four hundreds, no tens and five units. It is read four hundred, five.
4. 46,023 is four ten-thousands, six thousands, no hundreds, two tens and three units. It is read forty-six thousand, twenty-three.
5. 75,060,060 = seventy-five million, sixty thousand, sixty.

Write in columns the figures which express the following numbers:

1. Seventeen. One hundred seven.
2. Twenty-nine. Three hundred eighteen.
3. Fifty-two. Nine hundred thirty-eight.
4. Seventy-eight. Four thousand two hundred.
5. Forty-five. Nine thousand one hundred twelve.
6. Five thousand. Seven hundred thousand. Six million
7. Five million. Five thousand. Five.
8. Seventy-two million. Nine hundred forty-five thousand. Eight hundred sixteen.
9. Sixty million. Sixty thousand. Six hundred.
10. Eighty million. Eighty thousand. Eighty.
11. Thirty-nine million. Eight thousand. Nine.
12. Fifty-six million. Three hundred twenty thousand. Nine hundred sixteen.
13. Seventy-five million. Twenty-eight thousand. Nine.
14. Two hundred forty-seven million. Six hundred twenty-five thousand. Eight hundred sixteen.

Write in words, read from the page, or write in figures from dictation:

15.	84	25.	52360	35.	23742635
16.	100	26.	73064	36.	46375904
17.	119	27.	80975	37.	57298027
18.	236	28.	93620	38.	69380324
19.	328	29.	100000	39.	72506241
20.	456	30.	123250	40.	83037256
21.	508	31.	267580	41.	90364562
22.	643	32.	329705	42.	100000000
23.	759	33.	463076	43.	123234345
24.	804	34.	520362	44.	231456213

1. Read the following:

    3, 5, 70, 100, 2,500, 5,000, 40,000, 200,000.

2. Place a cipher at the right of each number represented, then read.

3. Write two ciphers instead of one, then read.

4. What effect would a cipher have on 2 if placed at the right of 4 in 24? If the cipher were placed between the 2 and 4? If the cipher were placed before the 2?

The ROMAN NOTATION employs the seven capital letters, I, X, C, M, V, L, D.

    I = 1.   X = 10.   C = 100.   M = 1000.
    V = 5.   L = 50.   D = 500.

Other values are represented by certain combinations of these letters in accordance with the following

PRINCIPLES.

1. If a letter is repeated, or if a letter or combination of letters of less value follows a letter of greater value, the sum of the values is the value of the combination.

Thus, III = 3. XXX = 30. VI = 6. DC = 600. XIX = 19.

2. If a letter of greater value follows a letter of less value, the difference of the two values is the value of the combination.

Thus, IX = 9. XL = 40. CD = 400.

3. A dash (—) placed over a letter or combination of letters, gives it a thousand-fold value.

Thus, Ī = one thousand. $\overline{XX}$ = twenty thousand.
Read the following:

    IV, VI, XIX, XXII, XLIX, MDCCCLXXXVII.

U. S. MONEY.

One dollar may be written $1, or $1.00.

One dollar and fifty cents may be written $1.50.

The point after the $1 means that the two figures on the right of it stand for cents, and the figure or figures on the left of it stand for dollars. This point is called the *decimal point*. Mills are written to the right of cents. No point is placed between cents and mills.

Two dollars and twenty-five cents = $2.25.

Ten dollars, sixty cents and four mills = $10.604.

READ.

1. $3.15.	3. $12.85.	5. $6.39.	7. $84.667.
2. $7.35.	4. $13.40.	6. $9.13.	8. $95.875.

WRITE IN FIGURES.

9. Seven dollars and seventy-five cents.

10. Thirty dollars, ninety cents and one mill.

11. One hundred fifty dollars and eighteen cents.

When dollars and cents are written in figures in one sum, the cents occupy two places even when they are less than ten.

Four dollars and five cents = $4.05.

READ.

12. $5.01.	14. $9.03.	16. $25.09.	18. $17.07.
13. $8.02.	15. $3.04.	17. $30.06.	19. $80.08.

WRITE IN FIGURES.

20. Seventeen dollars and seven cents.

21. Seventy-one dollars and seventy cents.

22. One hundred dollars and nine cents.

23. Eighty dollars, eighty cents and eight mills.

24. Fifty dollars, fifty cents and five mills.

25. Fifty dollars, five cents and two mills.

LESSON XXXII.

ADDITION.

A. ★★ ★★ B. ★★★ ★★★ C. ★★★ ★★★
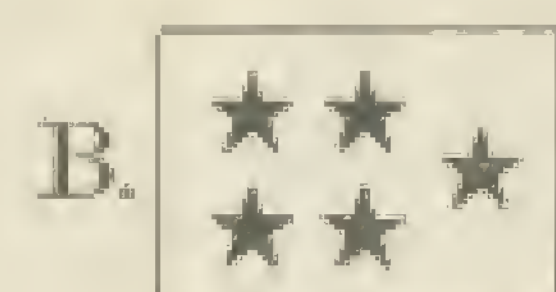
1. How many stars in group A? In group B? In group C?
2. How many stars in groups A and B put together?
3. How many stars in groups A, B and C put together?
4. How many are 4, 5 and 6?
5. Are 15 cents as many cents as 4 cents, 5 cents and 6 cents?
6. $4 + 5 + 6 = 15$. 15 is called the *sum* of 4, 5 and 6.
7. Find the sum of 8 and 4 and 2.
8. What is the sum of 9 and 7 and 4?
9. 5 books + 7 books = how many books? 4 books + 9 books = what?
10. 21 hats + 8 hats = how many hats? 5 hats + 10 hats?
11. 17 eggs + 6 eggs = how many eggs? 11 + 9 eggs?
12. 34 cows + 10 cows = how many cows? 6 cows + 14 cows?
13. 41 hens + 13 hens = how many hens? 5 hens + 7 hens?
14. 27 desks + 12 desks = how many desks? 10 desks + 11 desks = what?
15. 24 pencils + 7 pencils = how many pencils? 9 pencils + 100 pencils = what?
16. 30 windows + 15 windows = how many windows? 15 windows + 20 windows = what?
17. 53 slates + 5 slates = how many slates? 9 slates + 20 slates = what?
18. 75 papers + 100 papers = how many papers? 25 papers + 35 papers = what?
19. 50 cents + 50 cents = how many cents? 25 cents + 10 cents = what?

LESSON XXXIII.

1.	1.	2.	3.	4.	5.
46	46	52	45	27	42
35	35	26	73	63	56
24	24	33	92	94	28
83	83	46	47	16	79
18	188	54	38	43	34
17		71	63	85	95
188					

6.	7.	8.	9.	10.	11.
75	58	83	59	94	85
38	72	95	73	37	98
92	36	26	89	48	75
68	59	34	46	17	38
77	43	78	52	95	48
24	87	97	85	87	97

1.	2.	3.	4.	5.	6.
387	876	943	438	596	307
468	294	207	765	278	596
956	381	650	888	543	432
736	756	219	467	856	279

7.	8.	9.	10.	11.	12.
476	589	768	597	567	284
582	476	594	875	891	375
174	842	267	926	173	692
936	310	853	769	942	187
785	808	967	283	678	726

1. A boy paid 25c. for a First Reader, and 10c. for a slate. How much did he pay for both?

2. A girl paid 30c. for a Second Reader, 12c. for a writing-book, and 8c. for a sponge. How much did she pay for all?

3. 20c. was paid for a drawing-book, 15c. for a speller, and 9c. for a pencil. How much was paid for all?

4. John has 18 marbles, James 12 marbles, and George 9 marbles. How many marbles have they all?

5. Mary had 32c., her father gave her 11c., and her mother 8c. more. How many did she then have?

6. How many bushels of apples will three men pick in one day, if the first pick 16 bushels, the second 12 bushels, and the third 11 bushels?

7. Minnie, Emma, and Jane went out berrying; Minnie gathered 21 pints, Emma 15 pints, and Jane 12 pints. How many pints did they all gather?

8. A gentleman has 12 books on one table, 10 on another, 9 on a third table, and 8 on the fourth. How many has he on the four tables?

9. A man sold 10 turkeys to one man, 9 to another, 8 to a third, and kept 7. How many turkeys had he at first?

10. A gentleman kept 15 sheep in one field, 9 in another, 8 in a third, and 7 in a fourth. How many sheep did he have?

11. A woman paid $12 for a shawl, $10 for a bonnet, $8 for a chain, and $6 for a pair of shoes. How much money did she expend?

12. A gentleman bought a sleigh for $45, a set of harness for $15, a robe for $7, and a whip for $5. How much did he pay for all?

1. Add 9 thousand 3, 58 thousand 68, 64 thousand 208, 99 thousand 99, 273 thousand 574, 540 thousand 730, 879 thousand 7, 386.

2. Add 12 thousand 29, 79 thousand 524, 357 thousand 58, 792 thousand 218, 854 thousand 679, 927 thousand 9, 678 thousand 75, 2368.

3. Add 239 thousand 316, 528 thousand 97, 2 million 365 thousand 297, 7 million 67 thousand 954, 9 million 95 thousand 658, 8 million 586 thousand, 9 million 209.

4. Add 538 thousand 297, 3 million 3, 5 million 5 thousand 555, 6 million 72346, 9 million 75 thousand 654, 10 million 10 thousand 10, 2 million 807307.

5. Add 5 million 467 thousand 956, 729 thousand 475, 3 million 250 thousand 563, 7 million 368 thousand 845, 1729, 12 thousand 699, 4 million 37 thousand 76, 3 million 754 thousand 684, 9 million 500.

6. Add 43 thousand 687, 56 thousand 437, 64 thousand 482, 75 thousand 438, 79 thousand 347, 86 thousand 596.

7. Add 6 million 827 thousand 973, 2 million 638, 829 thousand 976, 5 million 38 thousand 647, 798 thousand 364, 4 million 7, 7 thousand 8, 7 million 984 thousand 879, 9 million 99 thousand 99.

8. Add 3 thousand 709, 53 thousand 678, 4 million 579 thousand 863, 7 million 620 thousand 308, 495 thousand 678, 7 million 875 thousand 689, 29,844.

9. Add 47854, 328 thousand 567, 2 million 47 thousand 854, 579 thousand 863, 4 million 876 thousand 594, 3 million 2 thousand 8, 97 thousand 582, 9010987.

10. Add 87 million 964 thousand 757, 3 million 986 thousand 759, 975 thousand 368, 77 thousand 675, 7 thousand 854, 989, 78, 9, 123674, 8478.

DRILL EXERCISES.

At sight, name the sums:

1.

5	6	7	8	9	4	8	7	7	5
4	7	8	9	3	9	6	7	9	9

2.

5	6	9	8	7	6	5	7	4	3
3	7	5	6	8	9	4	6	9	9
2	3	4	5	6	5	6	9	8	7

3.

10	41	22	53	84	75	36	67	98	59
6	6	6	6	6	6	6	6	6	6

4.

90	73	82	38	64	77	51	45	26	19
7	7	7	7	7	7	7	7	7	7

5.

39	63	94	25	86	17	72	51	48	55
8	8	8	8	8	8	8	8	8	8

6.

33	66	87	55	22	99	11	44	77	90
9	9	9	9	9	9	9	9	9	9

March 15, 1887

Mr. Henry Smiles

Bought of James Duncan,

1 span of Norman horses *$486*

1 Norman colt *115*

1 Jersey cow *235*

1. Paid $367 for a horse, $2,698 for a house, and $479 for furniture. How much did I pay for all?
2. A lot cost me $3,964, a barn $996, fencing $1,387, and sidewalk $178. What did they all cost?
3. A ship sailed in one week 846 miles, the second week 958 miles, and the third week as much as the other two. How far did she sail in the three weeks?
4. Three vessels are loaded with lumber, as follows: the first carries 29,368 feet, the second 31,986 feet, the third 37,568 feet. How many feet do they all carry?
5. Bought 4 car loads of wheat, paying for the first $878.36, for the second $1 179.75, for third $1,288.08, and for the fourth $1,587.12. How much did I pay for the wheat?

6. Built a block of four houses; the two end ones cost me $4,897.60 each, and the two middle ones $3,579.8? each. What did the block cost me?
7. A and B each paid $29,768.30 taxes, and C and D each $18,679.79. How much did they all pay?
8. The water tax receipts during the first week of February, 1875, were $9,367.50, the second week $8,576.86, the third week $11,975, and the fourth week $9,987.87. What were the receipts for February?
9. Bought a house for $5,897.48, a lot for $3,673.62, and sold them both so as to gain $1,976.50. How much did I receive for them?
10. There are 5,760 grains in one pound of silver. How many grains are there in 6 pounds of silver?
11. I bought a house for $3,578, and repaired it at a cost of $894.75. I wish to sell it so as to gain $750. For how much must I sell it?

1. I saw 36 birds in one flock, 14 in another, 12 in a third, and 8 in a fourth. How many birds did I see?

2. A lady put up 30 quarts of cherries, 20 quarts of plums, 15 quarts of peaches, and 9 quarts of tomatoes. How many quarts of fruit did she put up?

3. A man went on a journey of four days; the first day he traveled 28 miles, the second 12 miles, the third 15 miles, and the fourth 9 miles. How far did he travel?

4. Bought 20 yards of muslin from one merchant, 20 yards from another, and 30 yards from a third. How many yards did I buy?

5. Gave $9 for a pair of boots, $8 for a coat, and 90c. for a pair of gloves. How much did they all cost?

6. A boy wrote 20 words in one minute, 16 the second, 10 the third, 8 the fourth, and 6 the fifth. How many words did he write in five minutes?

7. Gave $5 for a hat, 50c. for a neck-tie, $4 for a vest, and 40c. for a pair of cuffs. How much was given for all?

8. James earned $8, and William $7 in one week, and their father as much as both. How much did they all earn?

9. Paid 20c. for 12 oranges, and 30c. for 15 oranges. How much money did I expend? How many oranges did I buy?

10. Paid 50c. for 13 lemons, and 40c. for 9 lemons. How many lemons did I buy? How much did they cost?

11. John worked 7 days for $4, and James 8 days for $7, and Rufus as many days as John and James for $11. How many days did they all work? How much did they receive?

12. Sold a chain for $11, a watch for $20, and a cow for as much as both watch and chain. How much did I get for all?

1. The cash sales of a certain merchant were as follows: Monday, $231.14; Tuesday, $252.36; Wednesday, $342.71; Thursday, $623.48; Friday, $432.27; Saturday, $536.58. What is the sum of the cash receipts?

2. Bought a lot for $1,876, and built a house on it that cost me for carpenter work, $2,345.67; mason work, $365.70; painting, $231.50; for leveling the lawn and making sidewalk, $371.25. What did the whole cost?

3. A man drew out of a bank $3,154.76, and had left in the bank $5,193.73. Find the number of dollars he had in the bank at first.

4. Having $1,284, I sold a house for $5,489 cash and a note for $2,713.54. How much money did I then have?

5. I have $7,540; how much will I have after laying up $345 each month for four months?

6. My salary is $2,500 a year, and I receive $1,780 for two houses which I rent, and $673.92 interest on money loaned. What is my income?

7. A farmer sold a horse for $175, two cows for $76.85, a tub of butter for $23.46, and a load of hay for $13.75. How much did he receive for all?

8. A merchant has $4,765.31 in the bank; how much will he have in the bank after he deposits $797.37 in cash and $564.11 in checks?

9. I paid $2,243 for a house, $825 for a barn, and for a farm as much as for the house and barn. How much did I pay for all?

10. Spent $205.75 Monday, $198.20 Tuesday, $197.50 Wednesday, $156.87 Thursday, $402 Friday, and $375.50 Saturday. How much did I spend during the week?

Add the following rapidly, by lines and by columns. Make combinations of 10 as often as possible; thus $6 + 4 + 7 + 3 = 10 + 10 = 20$.

	1.	*2.*	*3.*		*4.*	*5.*	*6.*	*7.*		*8.*	*9.*	*10.*	*11*
12.	$6 + 5 + 4$				$7 + 6 + 5 + 4$					$8 + 7 + 6 + 5$			
13.	$5 + 7 + 5$				$9 + 3 + 2 + 6$					$1 + 7 + 8 + 4$			
14.	$4 + 9 + 3$				$4 + 7 + 6 + 3$					$9 + 5 + 9 + 5$			
15.	$6 + 2 + 8$				$6 + 5 + 8 + 5$					$7 + 4 + 6 + 5$			

	16.	*17.*	*18.*		*19.*	*20.*	*21.*		*22.*	*23.*	*24.*
25.	$50 + 80 + 30$				$10 + 90 + 50$				$20 + 40 + 60$		
26.	$70 + 40 + 70$				$50 + 80 + 30$				$90 + 50 + 30$		
27.	$60 + 10 + 90$				$70 + 60 + 20$				$10 + 70 + 80$		

	28.	*29.*	*30.*	*31.*		*32.*	*33.*	*34.*	*35.*
36.	$3000 + 700 + 60 + 2$					$2000 + 400 + 60 + 8$			
37.	$5000 + 200 + 40 + 7$					$9000 + 800 + 50 + 4$			
38.	$6000 + 800 + 70 + 9$					$4000 + 500 + 70 + 7$			
39.	$4000 + 300 + 30 + 2$					$3000 + 200 + 40 + 6$			

40.	*41.*	*42.*	*43.*	*44.*
$ .50	$2.50	$10.25	$50.25	$125
.50	2.50	10.25	50.25	125
.50	2.50	10.25	50.25	125

45.	*46.*	*47.*	*48.*
$200.75	$305.40	$525.60	$1010.50
200.25	80.60	60.40	900.00
44.00	2.50	.50	89.50

	1.	*2.*	*3.*	*4.*	*5.*	*6.*
7.	$ 5.607	$36.089	$59.006	$68.02	$ 85.308	$165.00
8.	7.81	45.004	67.507	74.326	97.009	276.06
9.	12.563	38.25	59.06	86.005	128.03	359.007
10.	27.00	.978	.052	3.00	.57	998.999
11.	139.875	48.764	57.372	49.078	584.27	875.00
12.	237.00	9.006	8.987	..06	263.00	896.08

13. Find the sum of $327.34, $648.19, $57.68 and $1.05.

14. Find the sum of 12634 feet, 2542 feet and 10063 feet.

15. Find the sum of 576 bushels, 971 bushels and 38 bushels.

16. Find the sum of 1147 days, 984 days and 1321 days.

17. Find the sum of 154684 yards, 7673 yards and 48 yards.

18. Find the sum of 31076 rails, 2950 rails and 9875 rails.

19. Find the sum of 75000 lbs., 108504 lbs. and 706250 lbs.

20. Find the sum of $785.50, $581.01, $179.88 and $450.

21. Find the sum of $975.25, $1000.47, $48.85 and $750.

22. Find the sum of $8.95, $205.05, $8075, and $25250.

ATTENDANCE AT PUBLIC SCHOOL.

		23.	*24.*	*25.*	*26.*	*33.*
	WARD.	1st qr.	2d qr.	3d qr.	4th qr.	TOTALS.
27.	First, - - -	79276	62183	71993	68264	....
28.	Second, - - -	76381	85643	93300	77211	....
29.	Third, - - -	34720	37523	27851	25437	....
30.	Fourth, - - -	8427	8465	8192	7989	....
31.	Fifth, - - -	11698	12325	12765	11361	....
32.	Sixth, - - -	3625	4283	3973	3264	....
34.	TOTALS, - -	....	....	....	....	....

1. Paid $3 for 20 quarts of berries, $2 for 15 quarts, and 60c. for 5 quarts. How many quarts of berries did I buy? How much did they cost?

2. Gave 30c. for 2 pounds of beef, 40c. for 3 pounds of pork, 20c. for 3 pounds of mutton. How many pounds of meat did I buy? How much did I pay for meat?

3. A man bought a sleigh for $20, a harness for $15, and sold them at a gain of $9. How much did he receive?

4. A cage was made of 12 wires on each side, 8 on each end, and 30 in the roof. How many wires were required to make the cage?

5. How many strokes does a clock, that strikes the hours, make in 12 hours?

6. A room is 20 feet long, and 15 wide. How many feet long is a line drawn entirely around the room?

7. A gentleman upon a journey traveled for 3 days, increasing the distance traveled each day by 5 miles. If he traveled 10 miles the first day, how far did he travel during his journey?

8. Paid $12 for books, $18 for clothes, and as much for a horse as for both, plus $10. How much money did I expend?

9. A person walked 20 miles from home in one day, and the second day 30 miles farther; the third day he rode the entire distance home again. How far did he travel during the three days?

10. Two houses are 6 miles apart. How far will that person travel who starts from one of them, visits the other, and returns?

11. In an orchard there are 12 cherry trees, 16 pear trees, and four more apple trees than pear trees. How many trees are there in the orchard?

REVIEW—WRITTEN.

1. A farmer, a certain year, raised one thousand 175 bushels of wheat, twice as many bushels of oats, and nine hundred eight bushels of corn. How many bushels of grain did he produce?

2. In one army there were 60 thousand five hundred men, in another 19050 and in a third as much as in these two. How many men in the three armies?

3. Bought a house for $4688, a lot for $3650; I sold the house at a gain of $627, and the lot at a gain of $565. How much did I receive for both?

4. Four drovers sent sheep to market, the first sending 976, the second 1079, the third 1285, and the fourth as many as the first and second. How many did they all send?

5. Add $875.50, $123.08, $59.21, $785.25 and $975.

6. A, B, C and D, are farmers; A made in one year $1365, B $376 more than A, C $256 more than B, and D $468 more than C. How much did D make? How much did they all make?

7. A real estate dealer sold 2 lots for $2976.40 each, and 2 others for $2745.80 each. How much did he receive for them all?

8. Bought 256 bushels of wheat for $378.75, 267 bushels of oats for $198.68, 176 bushels of corn for $119.96, and 398 bushels of hay seed for $1367.75. How much did they all cost? How many bushels were bought?

9. Paid $3560 for a house, and $1880 for a lot. How much must I pay for 3 such houses, and 2 such lots?

10. One section of land has four equal sides, each one mile (5280 feet) long. How many feet around a section?

SLATE OR BLACKBOARD DRILL.

1.	567	4689	75467	543876	7983648	6785468	26.
2.	453	7568	54874	756836	5867437	7584786	27.
3.	978	5674	43677	647479	4976877	7376854	28.
4.	867	6756	89763	876543	7387586	9367973	29.
5.	946	7568	54576	786436	8975438	7546856	30.
6.	587	8746	87658	475679	5467679	7678457	31.
7.	764	5978	48326	787536	4857748	4856738	
8.	648	8364	75898	569478	8485675	7948557	
9.	873	5799	89784	678797	5676487	8769858	32.
10.	764	8658	76348	956746	7834656	7989998	33.
11.	953	6784	57867	758667	5847589	8888888	34.
12.	564	7579	76845	876748	8795664	7675757	35.
13.	756	6874	54597	456685	7547878	9695609	36.
14.	965	7549	68745	874896	8567557	7685785	37.
15.	547	6793	85697	568437	5784995	8659897	
16.	976	5547	58746	875968	8659448	5784546	
17.	752	8796	76568	968475	7586878	8638757	
18.	587	6547	67875	697989	8979789	7987899	38.
19.	678	9876	58362	823424	9106758	8956785	39.
20.	756	7837	95764	756848	7647576	8678598	40.
21.	547	8768	69897	863685	5638975	6738967	41.
22.	679	6578	75645	697876	8756787	9763687	42.
23.	543	7847	68459	768756	6574835	8765858	43.
24.	689	8789	79876	897678	7689978	9776898	
25.	798	7648	86489	976578	4898767	8987976	

NOTE.—For examples 1 to 25, inclusive, read across the page. For examples 26 to 31, inclusive, read vertically the successive columns, within the limit of the brace; and so for examples 32 to 37, inclusive, and same manner for examples 38 to 43, inclusive.

SUBTRACTION.

1. How many stars in this group?
2. If you take away 4 of the stars, how many will remain?
3. There are 9 boys in a room, 5 of them go out. How many are left?
4. On a table are 15 books, 7 of them are taken away. How many remain?
5. A boy has 35 cents, if he should lose 12 cents, how many would he have?

SUBTRACTION is the process of taking part of a number away to find what remains.

6. 18 is how many greater than 15?
7. Jane has 25c. and Lucy has 12c. How many more cents has Jane than Lucy?
8. One tree in my garden is 38 feet high, another is 20 feet high. How much higher is the one than the other?

SUBTRACTION is, also, the process of finding the difference of two numbers.

The numbers used in subtraction are called Minuend, Subtrahend, and Remainder or Difference.

9. From 35 subtract 12.

$$35 = \text{Minuend.}$$
$$12 = \text{Subtrahend.}$$
$$\overline{23} = \text{Remainder.}$$

PROOF: *Subtrahend + Remainder = Minuend: 12+23=35.*

Of what two numbers is the minuend the sum?

1. The minuend is 50 and the subtrahend is 35. What is the remainder?
2. The subtrahend is 17 and the remainder is 33. Find the minuend.
3. 51 gallons is the minuend and 26 gallons is the remainder. What is the subtrahend?

DRILL EXERCISES.

From each of the following subtract 6, then 7, then 8, then 9. Name results only.

	a.	b.	c.	d.	e.	f.	g.	h.	i.	j.
1.	11	17	13	12	18	14	19	15	20	16
2.	25	22	28	23	21	24	29	27	26	30
3.	31	35	39	32	36	40	33	37	34	38
4.	44	47	41	45	48	42	46	49	43	50
5.	52	55	57	53	56	58	51	54	59	60
6.	69	67	65	63	70	68	66	64	62	61
7.	78	76	74	72	75	71	73	77	79	80
8.	90	85	81	84	88	86	83	87	82	89
9.	91	97	92	98	93	94	96	95	99	100

10. What is the difference of 28 and 7?
11. 56 tops and 12 tops?
12. $85 and $60?
13. 37c. and 15c. ?
14. 9 times 7, and 6?
15. 94 rods and 54 rods?
16. 70 days and 11 days?
17. 81 tons and 72 tons?
18. 64 pens and 54 pens?

19. What is the remainder, after taking 47 out of 57?
20. 47 from 53?
21. 16 pk. from 35 pk.?
22. 7c. from 65c. ?
23. $81 from 8 times $12?
24. 18 years from 50 years?
25. 15 min. from $\frac{3}{4}$ of an hour?
26. 4 qt. from 4 pk. ?
27. 5 days from 1 week?

COPY AND SUBTRACT.

1.	2.	3.	4.	5.	6.
2475	3146	4823	5369	6577	8981
1903	2015	2510	3257	3456	7350

7.	8.	9.	10.	11.	12.
4699	5030	6644	7322	8549	9999
4300	2010	6640	7020	8009	9099

13. From 243 subtract 125.

$$243 = 200 + 30 + 13$$
$$125 = 100 + 20 + 5$$
$$118 = 100 + 10 + 8$$

Five units can not be taken from 3 units. Take one of the tens and add it to the 3 u., making 13 units. Now subtract 5 u. from 13 u., 2 t. from 3 t, and 1 h. from 2 h.

14. 253 / 135
15. 465 / 247
16. 572 / 327
17. 785 / 438
18. 895 / 577
19. 498 / 169
20. 981 / 749

14.	15.	16.	17.	18.	19.	20.
253	465	572	785	895	498	981
135	247	327	438	577	169	749

21. What number must be added to 257 to make 3782?
22. If I buy a horse for $145 and sell it for $180, do I gain or lose? How much?
23. The art of printing was invented in 1444. How many years since then?

1. Paid 14c. for paper, and 9c. for a pencil? How much more was paid for the paper than for the pencil?
2. Mary is 16 years old, and her brother is 8 years old. What is the difference of their ages?
3. John bought 18 marbles, and James 12. How many more did John buy than James?
4. A lady having $19, paid $8 for a shawl. How much did she have left?
5. A boy gathered 21 quarts of nuts, and sold 12 quarts. How many quarts were left?
6. A man bought 28c. worth of meat, and gave the trader 35c. How much change should he receive?
7. Bought 38c. worth of cotton cloth, and gave the merchant 50c. How much change should I receive?
8. Bought a suit of clothes for $36, and gave the dealer $50. How much change should I receive?
9. A gentleman is 60 years old, and his wife is 12 years younger. How old is the wife?
10. A farmer raised 75 bushels of corn this year, which is 15 bushels more than he raised last year. How much did he raise last year?
11. Paid $90 for a wagon, and sold it at a loss of $20. How much did I receive for the wagon?
12. Took 80 bushels of oats to market, which is 30 bushels more than I left at home. How many bushels did I leave at home?
13. Sold 100 bushels of wheat, which was 30 bushels more than I kept. How many bushels did I keep?
14. Bought 88c. worth of groceries, and gave the grocer $1. How much change should I receive?
15. I sold a slate for 75c., which was 12c. less than it cost. What was the cost?

1. From 322 subtract 148.

$$322 = 200 + 110 + 12$$
$$148 = 100 + 40 + 8$$
$$174 = 100 + 70 + 4$$

2.	3.	4.	5.	6.	7.
531	453	645	754	876	956
275	166	368	685	498	789

8.	9.	10.	11.	12.	13.
768	482	544	675	735	943
379	184	288	387	467	758

14.	15.	16.	17.	18.
2745	3476	4563	5784	8945
1338	1267	2356	2577	5438
1407				

19. From 500 subtract 235.

$$500 = 400 + 90 + 10$$
$$235 = 200 + 30 + 5$$
$$265 = 200 + 60 + 5$$

20.	21.	22.	23.	24.
4500	5600	7800	8750	9643
2860	2750	4945	3875	5385
1640				

25.	26.	27.	28.	29.
4308	7403	8705	9609	7604
2009	3005	5206	4290	4888
2299				

30.	31.	32.	33.	34.
6080	9987	8794	9000	7777
4391	3988	2895	999	5778

1. Paid 7c. for a pencil, 12c. for a book, and gave 25c. to the dealer. How much change should I receive?

2. A lady had $12, found $10, and afterward lost $8. How much did she have left?

3. Had 50c., paid 30c. for a book, and 12c. for toys. How much had I left?

4. A farmer kept 45 hogs in 3 pens; in one pen were 20 hogs, in the second 15. How many were there in the third?

5. Mary had 12 peaches, Jane 9 peaches, and Sarah 30 peaches. How many peaches has Sarah more than both Mary and Jane?

6. A wagon cost $50, a sleigh $20, and harness $10. How much does the wagon cost more than both sleigh and harness?

7. Buy 40c. worth of sugar, and 30c. worth of coffee. How much change should I receive if I give the grocer $1?

8. A hogshead will hold 63 gallons. If I pour into it at one time 40 gallons, at another 14 gallons, how many gallons more will fill it?

9. A boy put 18 chickens into one coop, 12 into another, and enough in the third to make 45 altogether. How many did he put into the third coop?

10. A woman paid 50c. for some tea, 25c. for cheese, and enough for oil to make her bill $1. How much did she pay for oil?

11. A farmer planted an orchard of 100 apple trees in 4 days. The first day he planted 30 trees, the second 30 trees, the third 20 trees. How many did he plant the fourth day?

12. A gentleman receives a salary of $72 a month, and his son a salary of $60 a month. How much more does the father receive than the son in 9 months?

1. The subtrahend is $9457; the difference is $7638. What is the minuend?

2. The difference is 12758 feet; the subtrahend 25697 feet. What is the minuend?

3. A gentleman's income one year was $2958, and the next year it was $4120. How much greater was his income the second year than the first?

4. Two vessels start from the same point and travel in the same direction; the one 7821 miles, the other 5078 miles. How far apart are they?

5. A gentleman owns two vessels, one of which will carry 25763 feet of lumber, and the other 20976 feet. How much will the first vessel carry more than the second?

6. In the Chicago Water Works one of the engines will pump 38,000,000 gallons per day, another 18,675,450 gallons. How many gallons more does the larger engine pump than the smaller, per day?

7. Gave $15234 for a farm, and spent $8796 less for erecting buildings upon it. How much did the buildings cost?

8. A gentleman having $5538, expended $1689 for cattle. How much had he left?

9. A man having an estate worth $7834, bequeathed to his two sons $4975. How much did he retain?

10. A man bought a quantity of land for $12975, and sold it for $15250. How much did he gain?

11. The minuend is 8469; the subtrahend is 7883. What is the difference?

12. The difference of $17846 and $27984, is what was paid for a certain property; it was soon after sold for $14025. How much was the gain?

1. Having $2847, I sold a house for $5489; how much more do I need so that I shall have $23425?
2. A man worth $15300, gave $4360 to each of his two sons, and $4225 to his daughter, and the remainder to charitable purposes. How much did he give in charity?
3. Having $5895, I lost in trade $2750, then made $3560, afterward lost $4680, and then made $3690. How much did I have then?
4. From 300 thousand subtract the difference of ten thousand seventy and one hundred four.
5. Vice-President Wilson died in 1875 at the age of 63. The Declaration of Independence was made in 1776. How many years before the birth of Henry Wilson was Independence declared?

6. A gentleman owning 589 acres of land, bought 349 more; he afterward sold at one time 294 acres, and at another 57 acres. How many acres were left?
7. If I travel Monday 275 miles from home, Tuesday 190 miles towards home, Wednesday 387 miles from home, and Thursday return 200 miles; how far from home am I Thursday night?
8. A brickmaker had 2 kilns, each containing 43567 bricks; he sold 8376 at three different times, and used 12564. How many bricks had he left?
9. From a bin containing 8007 bushels of salt, a merchant sold to one man 1020 bushels, to another 129 bushels, and to another the remainder. How many bushels did the last man buy?
10. A farmer, being asked how many sheep he had, said that if he had 420 + 560 more, he would have 3628. How many had he?

1. The source of the Missouri River is 6800 feet above the level of the sea; that of the Mississippi is 1680 feet above the sea level. A certain spring is located 1000 feet below the source of the Missouri. How far above or below the source of the Mississippi is it?
2. 3 houses are found to be standing in a straight line; the second 5420 feet from the first, and the third 7337 feet from the second. A certain tree, standing between the second and third, is 538 feet from the third. How far is the tree from the first house?
3. $6385 was paid for each of four houses, which were soon after sold so as to lose $987 on each of two of them. How much was received for the houses?
4. A commission merchant received 7598 barrels of flour for each of 3 months, and sold 7438 for each of 2 months. How many barrels has he left?

5. If I can save $568 a year from my income, how much less than $3000 can I save in 4 years?
6. George Washington died in 1799 at the age of 67 years. How long before his birth was the discovery of America in 1492?
7. If a man's income is $200 a month, and his expenses are $35 a month for rent, $48.60 for grocery bills, and $45.75 for other expenses, how much can he save in 6 months?
8. An army of 100000 men engaged in battle, and was re-enforced by 29000 more; 237 deserted, 12888 were killed, 1500 were missing. How many were left in the army?
9. Two lots cost $3768 each, and the houses that stand on them cost $4500 each. How much more did the houses cost than the lots?

PROBLEMS TO SHOW HOW CHANGE IS COMMONLY MADE.

Having 1c., 5c., 10c., 25c., 50c , pieces, and $1, $2 and $5 bills, count out the proper change in each of the transactions given below:

1. I have $1; buy a pencil for 8c.; a slate for 25c.

> REMARK: *Suppose the clerk to use two 1c., one 5c., one 10c. and one 50c., pieces, and, since the purchase is 33c., he will say, while putting the money into your hand, 35, 40, 50, $1.*

2. Have 50c.; buy a book, 35c.
3. Have 75c.; buy a coal-scuttle, 65c.
4. Have $1; buy a reader, 55c.; paper, 10c.; eraser, 3c.
5. Have $2; buy Burns' Poems, $1.25; St. Nicholas for June, 35c.
6. Have $2.50; pay one year's subscription to Youth's Companion, $1.75; buy stationery, 35c.
7. Have $3; buy a pair of shoes, $2.50; bananas, 15c.
8. Have $4; buy a cap, 75c.; scarf, 60c.; gloves, $1.
9. Have $5; buy sugar, $1.50; butter, 40c.; meat, 35c.
10. Have $7; buy a pair of boots, $5.25; slippers, $1.
11. Have $10; buy dress goods, $4.20; cambric, 38c.
12. Have $10; buy cheese, 70c., eggs, 60c.; tapioca, 40c.; butter, 80c.
13. Have $10; buy potatoes, $1.30; turnips, 50c.; tomatoes, 42c.
14. Have $10; buy a bbl. of flour, $5.60; corn meal, 48c.
15. Have $10; buy cashmere, $5.80; flannel, $1.75.
16. Have $15: buy a ton of coal, $6.25; cord of wood, $6.50
17. Have $15; buy beef, $7.40; veal, $2.60: ham, $1.27.
18. Have $20; buy 4 bbl. of apples ($3.20 each), $12.80.
19. Have $20; buy a suit of clothes, $18.75.

A PRACTICAL METHOD.

1. A man having $2719 paid $628 for a lot and $399 for a span of horses and harness.

REMARK: *Instead of adding the parts of the subtrahend, and then subtracting the sum from the minuend, the columns of the subtrahend are added, and as many to it as are required to make the unit figure of the sum equal to the corresponding figure in the minuend. Thus, 9 + 8 = 17. 17 and how many are 19? Write 2 in remainder and add 1 (ten) to next column. 1 + 9 + 2 = 12. 12 + (?) = 21? Write 9 in remainder and add 2 to the next column. 2 + 3 + 6 = 11. 11 + (?) = 17? Write 6 in remainder and add 1 to the next column. 1 + (?) = 2? Write 1 in remainder. (See page 81.)*

	$2719, Min.
Sub.	628,
	399,
	$1692, Rem.

	2.	3.	4.	5.
Min.	$3864	$5246.75	$7566.48	9783 ft.
Sub.	823	1246.23	3270.16	3542 ft.
	724	873.16	2586.92	4624 ft.
Rem.				

	6.	7.	8.	9.
Min.	$3256.40	43275 lbs.	5762 yds.	$8765.00
Sub.	1024.35	12043 lbs.	1247 yds.	3246.38
	768.87	10037 lbs.	876 yds.	842.53
	105.05	8702 lbs.	1043 yds.	357.24
	38.21	4087 lbs.	1547 yds.	471.01

10. The sum of three numbers is 3825. One of the numbers is 1243, and another is 791. What is the third?

11. Mr. Howard deposited $4350 in a bank. He drew out by checks $175.50, $89.45, $27.85, $198.25, $760.06, $401.31, $9.09, and $2066.33. How much money had he left in the bank?

1. A person had one hundred ninety thousand dollars ; he gave $50500 to found a school. How much had he left? Did you find the difference or remainder in this example?

2. Make an example in subtraction, using the numbers 3847 and 1999, such that your answer will be the difference of those two numbers.

3. The four quarters of a beef weighed 721 pounds, the two hind quarters weighed 326 pounds and one of the front quarters 169 pounds. What was the weight of the other quarter?

4. Make and solve an example in subtraction and show how to prove the answer correct.

5. Mr. Lamb owns lands valued at $3875, houses valued at $7800, and $745.85 in a bank. He owes $1550 on the land, $3195 on the houses and has a debt of $348 besides. How much will he have left, if he pays all he owes?

6. The minuend is 271635 and the remainder is 99777 less than 300000. What is the subtrahend?

7. A man possesses $100000; he owes $3478. After paying his debts, how much more will he have left than he owed?

8. From the largest number that can be written with the figures 3, 9, 7, 5, 8 and 4, subtract the smallest that can be written with the same figures.

9. F's salary is $2500 per annum. His personal expenses are $698; household expenses, $1529.50; insurance, $53.375; taxes, $115.40. What does he save in one year?

MULTIPLICATION.
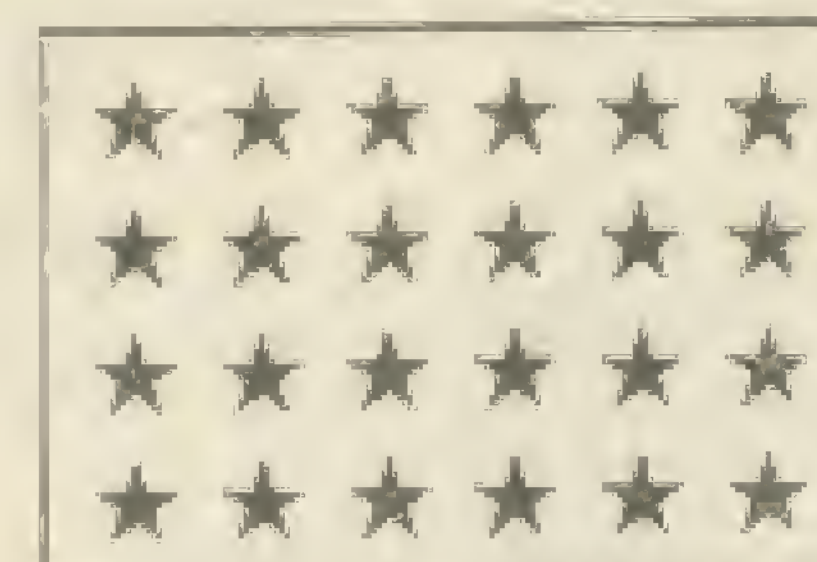
1. How many rows of stars in this group?
2. How many stars in each row?
3. How many stars in the group?

REMARK.—*By addition: 6 stars + 6 stars + 6 stars + 6 stars = 24 stars.*

By multiplication: 4 times 6 stars = 24 stars.

4. 4 times 6 stars equal 24 stars.

In this example 6 (stars) is the *multiplicand.*

4 is the *multiplier.*

24 (stars) is the *product.*

The multiplicand and multiplier are *factors* (makers) of the product.

6×4 is read 6 multiplied by 4, or 4 times 6.

READ THE PRODUCTS.

5.			
9×8?	6×12?	9×9?	12×7?
6×9?	12×8?	12×11?	11×11?
7×12?	10×12?	11×7?	12×12?
5×9?	9×7?	6×11?	7×6?
8×8?	9×9?	7×7?	6×6?
6×8?	11×9?	12×9?	10×11?
5×4?	7×8?	8×5?	4×12?
7×3?	9×2?	12×3?	12×5?

6. At $7 a ton what will 4 tons of coal cost?
7. What will be the cost of 6 oranges, if one orange costs 5c. ?
8. Find the cost of 6 sheep at $4 apiece.

1. If one ton of coal costs $7, how much will 5 tons cost?
2. There are 8 quarts in one peck. How many quarts are there in 4 pecks?
3. How many pecks are there in 9 bushels, if there are 4 pecks in 1 bushel?
4. How much can a man earn in 6 days, if he can earn $8 in one day?
5. A gentleman gave $12 to each of his 5 sons. How much did all receive?
6. A person traveled 12 miles a day for 7 days. What distance did he travel?
7. A boy can earn $9 a month. How much can he earn in 9 months?
8. There are 12 inches in one foot. How many inches in a pole 8 feet long?
9. There are 3 feet in one yard. How many feet are there in 20 yards?
10. How many inches are there in 2 yards?
11. There are two pints in one quart. How many pints are there in 5 gallons?
12. Bought 12 yards of broadcloth at $12 a yard. How much was the cost?
13. Gave $6 a head for sheep, and $12 a head for hogs. How much will 5 sheep and 5 hogs cost?
14. What is the cost of 12 pairs of boots at $8 a pair?
15. How many inches are there in 3 yards?
16. How many quarts in 2 bushels?
17. Buy 9 yards of cloth at $5 a yard. How much change should I receive if I offer the trader $50?
18. A lady had a $50 note, a $20 note, and a $5 note. How much money had she left after paying for 6 sheep at $12 each?

1 Multiply 245 by 23. USUAL METHOD.

$$245 \times 3 = 735$$
$$245 \times 20 = 4900$$
$$245 \times 23 = 5635$$

245
23

735 = product by 3 units.
490 = product by 2 tens.
5635 = sum of partial products.

2.	3.	4.	5.	6.
532	478	646	753	928
24	35	46	57	83

7.	8.	9.	10.	11.
584	976	385	496	839
29	47	93	75	86

12.	13.	14.	15.	16.
594	786	2568	3279	4985
56	68	72	37	59

Find the answers to the following by addition; then by multiplication. Which method is shorter?

17. $24 + 24 + 24 + 24 + 24 + 24 = ?$
18. $35 + 35 + 35 + 35 + 35 + 35 = ?$
19. $48 + 48 + 48 + 48 + 48 + 48 = ?$

When can the method of multiplication be used for that of addition?

20. Multiply 123, 345, 567, 789, 987, each by 43.
21. There are 365 days in one year. How many days did Vice President Wilson live, who died at the age of 63 years? Add 15 days for leap years.
22. There are 63 gallons in one hogshead. How many gallons are there in 25 hogsheads?

NAME THE PRODUCTS.

1.	2.	3.	4.	5.
40	500	600	7000	1200
7	9	8	6	7

6.	7.	8.	9.	10
506	908	305	407	804
4	5	8	7	9

11.	12.	13.	14.	15.
50 min.	700 min	900 min.	1208 min.	607 min.
9	6	7	5	8

16.	17.	18.	19.	20.
$101	$503	$1104	$3070	$1104
9	8	6	5	7

21. $200 + $150 + $8 = ?
22. 80 bu. + 20 bu. + 50 bu. = ?
23. 50 pts. + 90 pts. + 40 pts. = ?
24. 100c. − 50c. − 25c. = ?
25. 500 qts. × 6 = ?

26. 200 × 9 = ?
27. 500 × 8 = ?
28. 40 × 12 = ?
29. 75 × 2 = ?
30. 60 × 5 = ?

What is the cost of

31. 11 pounds of rice, at 7c. a lb. ? At 6c. a lb. ?
32. 12 barrels of flour, at $6 a bbl. ? At $5 a bbl. ?
33. 7 pounds of meat, at 9c. a lb. ? At 15c. a lb. ?
34. 8 pounds of nuts, at 12c. a lb. ? At 20c. a lb. ?
35. 6 cows, at $50 each? At $70 each?
36. 8 sheep, at $9 each? At $12 a head?
37. 9 books, at $11 each?
38. 12 months' rent, at $20 a month?

To multiply a number by 10, annex to the multiplicand one cipher; by 100, annex two ciphers; by 1000, annex three ciphers; $5 \times 10 = 50$; $85 \times 100 = 8500$; $250 \times 1000 = 250000$.

1. Multiply 42, 75, 143, 250, 837, each by 10.
2. Multiply 29, 56, 89, 104, 980, each by 100.
3. Multiply 45, 67, 92, 120, 375, each by 1000.

4.	5.	6.	7.	8.
28	35	47	169	183
20	20	30	40	50
560				

9.	10.	11.	12.	13.
46	75	87	142	235
200	200	300	400	500
9200				

14. $(38 \times 100) + (56 \times 200) + (92 \times 300) = ?$
15. $(137 \times 54) + (85 \times 5000) + (167 \times 70) = ?$

REMARK: *Perform operations in parentheses first.*

16. Bought 70 head of horses at $127 each; 90 head of cattle at $56 each, and 300 hogs at $19 each. How much was paid for them?
17. The salary of the President is $50,000 a year. How much does he receive in one term of 4 years? In two terms?
18. There are 2000 pounds in one ton of hay. How many pounds of hay can be cut from 12 acres of meadow that yields 3 tons an acre?
19. I agreed to build 15 houses at $4000 a house. What was the amount of the contract?

1. There are 16 ounces in one pound avoirdupois. How many ounces in 5 pounds of tea?

2. Bought 6 oranges at 5c. each, and 5 lemons at 8c. each. How much did they all cost?

3. Bought 12 yards of cloth, and 5 yards of velvet; the cloth at $5 a yard, and the velvet at $8 a yard. How much did I pay for both?

4. How many days are there in 9 weeks? In 12 weeks? In 20 weeks?

5. Built two fences; one 45 feet long, the other 12 yards long. Which is the longer, and how much?

6. There are 9 square feet in one square yard. How many square feet in a floor that contains 12 square yards?

7. There are 4 quarts in one gallon. What is the cost of 3 gallons of oil at 12c. a quart?

8. There are 3 feet in one yard. What is the cost of 12 yards of iron pipe, at $1 a foot?

9. Since there are 4 pecks in one bushel, what is the cost of 5 bushels of peaches, at $2 a peck?

10. Bought 5 tons of coal at $12 a ton, and 6 cords of wood at $5 a cord. How much was paid for both coal and wood?

11. What is the cost of one gallon of molasses at 20c. a quart?

12. Paid 75c. for a bushel of potatoes, and sold them at 20c. a peck. How much did I gain or lose?

13. If a boy can earn $2 a day, how much can he earn in 5 weeks, omitting Sundays?

14. Bought 3 boxes of raisins at $5 a box, and 5 boxes of lemons at $3 a box. How much did both cost?

15. Mary reads twice each day. How many times will she read in 4 weeks of 5 days each?

1.	2.	3.	4.	5.
286	475	653	768	825
204	302	405	506	608
1144				
572				
58344				

6. 375×209

7. 692×507

8. 245×908

9. 592×307

10. 749×804

11. 385×407

12. 946×709

13. 589×501

14. 476×605

In the following examples, find the cost of each article, and then find the total amount of each account.

15. GROCERIES.
     35 lbs. prunes at 6c. a lb. - - - $............
     85 lbs. coffee at 28c. a lb. - - - ....
     74 lbs. raisins at 13c. a lb. - - - ....
     28 lbs. tapioca at 14c. a lb. - - - ....

16. DRY GOODS.
     45 yds. muslin at 9c. a yd. - - - $............
     38 yds. cashmere at 85c a yd. - - - ....
     57 yds. flannel at 65c. a yd. - - - ....
     26 yds. velvet at $1.46 a yd. - - - ....

17. FUEL.
     14 tons hard coal at $6.75. - - - $............
     18 tons soft coal at $3.95. - - - ....
     37 tons coke at $3.18. - - - ....
     36 cords wood at $6.50. - - - ....

18. MEATS.
     145 lbs. beef at 13c. - - - - $............
     257 lbs. pork at 11c. - - - - ....
     88 lbs. veal at 16c. - - - - ....
     65 lbs. mutton at 12c. - - - - ....

1. John counted 7 nines, and Mary 6 twelves. How many more units did Mary count than John?

2. In a cornfield there are 8 rows of corn, having 9 hills in each row; in another there are 8 rows, having 10 hills in each row. How many hills in the two fields?

3. There are 8 furlongs in one mile. How many furlongs are there in 9 miles and 6 furlongs?

4. Since there are 12 inches in one foot, how many inches are there in 12 feet and 6 inches?

5. A squirrel carried into his nest 5 acorns each day for 2 weeks. How many acorns did he gather?

6. A farmer sold 5 tons of hay at $12 a ton, and took in exchange 7 barrels of flour at $8 a barrel, and the remainder in cash. How much cash did he receive?

7. One farmer took to market 8 turkeys, weighing 12 pounds each, and another took 12 geese, weighing 9 pounds each. How much more or less did the turkeys weigh than the geese?

8. Bought 12 yards of ribbon, at 12c. a yard, and gave in payment 120c. How much do I still owe?

9. Two boys start from the same place and travel in the same direction, one at the rate of 5 miles an hour, the other at the rate of 7 miles an hour. How far apart will they be in 12 hours?

10. Two men start from the same place and walk in opposite directions, one at the rate of 4 miles, the other at the rate of 3 miles an hour. How far apart will they be in 12 hours?

11. Bought 9 tons of coal at $12 a ton, and gave in payment 12 barrels of flour at $8 a barrel, and the rest in cash. How much cash did I give?

1. In one cubic foot there are 1728 cubic inches. How many cubic inches in 96 cubic feet and 1245 cubic inches?

2. How far will a locomotive travel in 2 weeks, omitting Sundays, at the rate of 28 miles an hour for 8 hours each day?

3. What is the cost of 1675 chests of tea, each chest containing 67 pounds, at 45c. a pound?

4. Purchased 475 bushels of wheat at 85c. a bushel, 96 bushels of corn at 46c. a bushel, and 157 bushels of oats at 35c. a bushel. What was the cost of all?

5. Bought a bill of goods as follows: 27 yards of cloth at $4.25 a yard, 56 yards of velvet at $5.80 a yard, 36 yards of silk at $2.75 a yard, and 125 yards of muslin at 9c. a yard. How much was the cost of the goods?

6. A house is worth $2450; the farm on which it stands is worth 12 times as much as the house, less $600, and the stock is worth twice as much as the house. What is the value of the house, farm and stock?

7. If a person receives an annual salary of $1875, and expends each year $312 for board, $105 for clothing, and $275 for other purposes, how much can he save in 18 years?

8. Purchased 58 tons of coal at $7.50 a ton, 96 cords of maple wood at $5.75 a cord, 128 cords of pine wood at $4.80 a cord. If I pay $1296 cash, how much remains to be paid?

9. A horse is worth $96; the field in which he is pastured is worth 12 times as much; the whole farm is worth 9 times as much as the field; and the house $3216 less than the farm. How much is the house worth?

11

1. Sold 12 yards of cloth at $5 a yard, receiving in payment 9 head of sheep at $6 a head, and the remainder in money. How much money did I receive?
2. Traveled on a journey afoot for 6 days at 12 miles a day, and returning rode 2 days at 25 miles per day, and walked the remaining distance home. How far did I walk on my return? How many miles did I walk on the journey?
3. I have a box divided into 2 parts; in each part there are 3 parcels; in each parcel there are 4 bags; in each bag there are 5 marbles. How many marbles are there in the box?
4. Since there are 4 pecks in one bushel, how many pecks are there in 9 bushels and 3 pecks? In 12 bushels and 2 pecks?
5. Since there are 12 inches in one foot, how many inches are there in 6 feet and 6 inches? In 9 feet 7 inches? In 12 feet 8 inches?
6. Since there are 8 furlongs in one mile, how many furlongs are there in 7 miles and 5 furlongs? In 9 miles and 6 furlongs? In 12 miles and 7 furlongs?
7. A lady bought a gold chain weighing 2 pennyweights 12 grains. How many grains did it weigh, if there are 24 grains in one pennyweight?
8. Bought 5 ounces 15 pennyweights of gold, at $1 per pennyweight. How much did it cost if there are 20 pennyweights in one ounce?
9. Find cost of 12 gallons 2 quarts of oil at 10c. a quart; there being 4 quarts in one gallon.
10. At 8c. each, how much will 4 doz. and 2 lead pencils cost?
11. Find cost of 3 gallons and 3 quarts of syrup at 60 cents a gallon.

REVIEW—WRITTEN.

1. From the sum of $169.005, $2001.10, $97.37½, $102.305, $85.02, subtract $1809.02.
2. Find the difference of 1868×35 and 396×18.
3. A man earned $2000 a year. He pays $6 a week for board, $456 for clothes and $318 for other expenses. How much can he save in 9 years?
4. How much less will 27 horses cost at $135.75 each than 78 cows at $65.50 each?
5. What will a bushel of potatoes cost, if ½ peck is worth 35 cents?
6. If I can save $568 from my income a year, how much less than $5000 can I save 8 years?

7. I paid $28 an acre for 1575 acres of land and $2345 for improvements. Find the whole cost.
8. Which are worth more, 345 acres of land at $38 an acre, or 17 building lots at $748 each? How much more?
9. A man paid for a house $2725, which was ⅓ of all his money. How much money had he left?
10. On one side of a street there are 69 trees, which are ⅓ of the number of trees on the other side. What are all these trees worth at $7 each?
11. A bought of B 563 acres of land, at $48 an acre, and gave in payment a house worth $3756; a factory worth 6 times as much, less $1267, and the rest in money. How much money did A pay?
12. A miller sold 650 barrels of flour, each weighing 196 pounds, at 3c. a pound; he took in part payment a yoke of oxen worth $75, and the rest in cash. How much cash did he receive?

LESSON LXVIII.
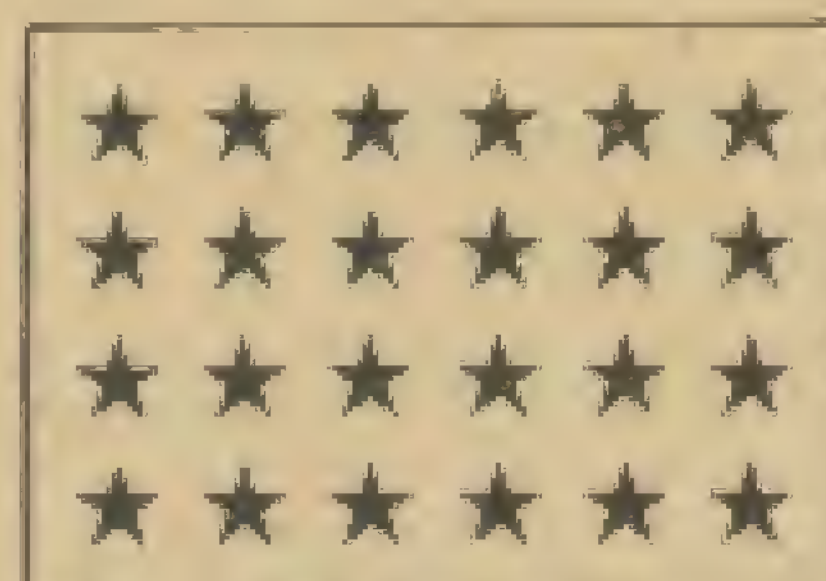
DIVISION

1. How many stars in this group?
2. How many 6's in 24?   How many 4's in 24?
3. 6 is contained in 24 how many times?
4. 4 is contained in 24 how many times?
5. How many groups of 6 stars each can be made out of the 24 stars?

This use of *division* is to find how many *equal parts* there are in a number when the number of units in each part is known.

6. If 24 stars be divided into 4 groups, how many stars in each group?
7. If 24 stars be divided into 6 groups how many stars in each group?
8. Divide 24 into 2 equal parts. How many units in each part?

This use of *division* is to find how many *units* there are in one of the equal parts of a number when the number of parts is known.

9. Make 15 marks on the board and divide them into groups of 3 each.   How many groups have you?
10. Divide them into 3 groups.   How many in each group?

15 (marks), the number to be divided, is the *dividend.* 3 is the *divisor.*   5, the result obtained by division, is the *quotient.* The divisor and quotient are factors of the dividend.   15 ÷ 3 is read 15 divided by 3.

Find the number of times each divisor is contained in the dividend written with it, in the following examples:

1.	2.	3.	4.
$11)$69	$11)$90	$11)$100	$11)$110
6...$3 rem.			

5.	6.	7.	8.
$12)$75	$12)$100	$12)$120	$12)$125

9.
4)144 = 120 + 24
  36 = 30 + 6

10.	11.	12.
4)186	4)188	4)220

13.	14.	15.	16.	17.
5)125	5)130	5)145	5)165	5)175

18.	19.	20.	21.	22.
6)132	7)154	8)184	9)198	9)225

23.	24.	25.	26.	27.
7)182	8)192	8)216	9)234	9)252

28.
4)532 = 400 + 120 + 12
  133 = 100 + 30 + 3

29.	30.
4)544	4)556

31.	32.	33.	34.	35.
5)630	5)645	6)732	6)756	7)868

36.
6)1476 = 1200 + 240 + 36
  246 = 200 + 40 + 6

37.	38.
6)1764	6)2514

39.   7)2268   8)2936   8)3384   9)2097   9)2925

1. If $63 was paid for 9 yards of cloth, what was the cost of one yard?
2. A gentleman paid $72 for 12 head of sheep. What was the cost of one sheep?
3. There are 8 "shillings" in one dollar. How many dollars are there in 72 "shillings"?
4. Paid 96c. for 12 yards of ribbon. What was the cost of one yard?
5. If a man can dig 84 feet of trench in 7 days, how many feet can he dig in one day?
6. If 5 yards of silk cost $15, what cost 8 yards?
7. If 6 men can do a piece of work in 12 days, how long will it require 8 men to do the same?
8. What is the cost of 20 oranges, if 9 oranges cost 45c.?
9. How many tons of coal at $6 a ton will pay for 12 barrels of flour at $5 a barrel?
10. A gentleman bought 12 yards of velvet at $3 a yard, and gave in payment $6, and the remainder in flour, at $6 a barrel. How many barrels did he give?
11. If 8 quarts of molasses cost 72c., how much will $\frac{1}{3}$ of 15 quarts cost?
12. If 9 men can mow 36 acres in one day, how much can 12 men mow in the same time?
13. If 6 men can build a boat in 14 days, how long will it require 7 men to do it?
14. If 9 pounds of sugar cost 108c., how much will $\frac{1}{4}$ of a pound cost?
15. How much will 9 barrels of cider cost, if 5 barrels cost $45?
16. If 12 dozen eggs cost $2.40, what is $\frac{1}{4}$ dozen worth?
17. A good sized horse is 16 hands high. How many inches is that? (The hand-measure is 4 inches.)

1. Divide 1812 by 6.

Divisor, 6)1812, Dividend.   6)1800 + 0 + 12

302, Quotient.   300 + 0 + 2

PROOF: *Quotient × Divisor = Dividend.*

302 × 6 = 1812

2.   6)1218   6)1824   6)2430   6)3648   6)4254

3.   7)1421   7)2135   7)2807   7)3542   7)4956

4.   8)1608   8)2432   8)3248   8)4056   8)4864

5.   9)1818   9)2745   9)3654   9)4572   9)8163

6.   8)7256   8)3656   8)7576   8)9352   8)1032

7.   9)8892   9)3978   9)3565   9)3288   9)7356

PROOF:

8. 7)1569   *Quotient × Divisor + Remainder = Dividend.*

224...1 rem.   224 × 7 + 1 = 1569

9.   2)273   3)346   4)450   4)575   5)777

10.   6)368   6)680   7)479   8)703   9)888

11.   6)1479   6)3338   6)2450   6)3567   6)7335

12.   7)2565   7)4733   7)6456   7)9350   7)5870

13.   8)7058   8)3646   8)7577   8)2939   8)6735

14.   9)8895   9)3979   9)2560   9)6328   9)5670

1. Gave $63 for 9 tons of coal. How much should be paid for 12 tons at the same rate?
2. Gave ¼ of $48 for 4 yards of silk. How much will 24 yards cost, at the same rate?
3. If 12 boxes of oranges cost $72, how much will 8 boxes cost?
4. Paid 80c. for 4 quires of paper. How much should be paid for 9 quires?
5. If 6 men can do a piece of work in 12 days, in what time can 9 men do it?
6. How many men can do as much in 6 days as 5 men can do in 12 days?
7. How many men can build a wall in 10 days, if 5 men can build it in 20 days?
8. What is the cost of ½ of 16 yards of cloth, if 12 yards cost $24?
9. If 8 acres of land cost $320, how much will 3 acres cost?
10. What is the cost of ⅔ of 15 pounds of coffee, if 1 pound is worth 20c.?
11. How much will ¾ of 12 yards of silk cost, if 8 yards cost $16?
12. If 8 men can dig a drench in 20 days, how many men will be required to do it in 16 days?
13. What will be the cost of 9 yards of cashmere, if the price of 3 yards is $2.40.
14. What is the cost of ⅜ of 16 bushels of wheat, if 2 bushels are worth $1.80.
15. If 12 yards of ribbon cost 84c., how much will ⅓ of 18 yards cost?
16. Bought 9 barrels of flour for $72, and gave 6 barrels of it for coal at $6 a ton. How many tons did I receive?
17. If 20 barrels of flour are worth $100, what is the value of a sack of flour, containing ⅛ barrel?

REVIEW.

1.	6)1884	6)2754	6)4050	6)5202	6)7008
2.	7)1568	7)3198	7)3794	7)6097	7)8988
3.	8)1944	8)2184	8)4072	8)5392	8)7976
4.	9)2187	9)4878	9)5004	9)8109	9)9702

5. A carpenter received $168 for building 6 rods of fence. What was the cost per rod?
6. A traveler goes 7 miles an hour. In how many hours will he travel 259 miles, if he continues at the same rate?
7. How many days will 2106 reams of paper last a publisher, if he uses 9 reams a day?

8.	5)3827	6)4306	7)5092	8)6939	9)7056

9. In how many days can 8 men do 456 days' work?
10. At 9 cents a pound, how many pounds of sugar can be bought for 2664 cents?
11. The tuition received at a certain private school was $2025 for one term. How many pupils attended, if each was required to pay $9?
12. Four quarts equal one gallon. How many gallons in 1625 quarts?
13. A stockman bought an equal number of sheep and pigs for $296. For the sheep he paid $5 each, and for the pigs $3 each. How many of each kind did he buy?
14. Two men are 1225 miles apart; they are walking toward each other. One travels at the rate of 5 miles an hour, and the other at the rate of 4 miles an hour. In how many hours will they meet?

1. ¾ of $40 is what I gave for 5 yards of cloth. What is the price of one yard?

2. ⅞ of $40 is what was paid for 7 sheep. What did one sheep cost?

3. Paid $60 for 12 barrels of flour. At what price per barrel should it be sold so that $12 may be gained?

4. I sold 12 dozen pens for 84c., which was at a loss of 12c. How much did they cost per dozen?

5. What is the cost of ⅔ of 18 sheep, if 8 sheep cost $56?

6. A wagon cost $60, which is 5 times the cost of the harness. What is the cost of both the harness and the wagon?

7. A watch cost $120, which is 4 times the cost of the chain. What is the cost of the chain?

8. Paid $96 for a sleigh, which was 12 times the cost of the bells. What was the cost of the bells? Of both?

9. ⅓ of $60 is $3 more than the cost of 9 barrels of salt. What was the salt a barrel?

10. If 8 pounds of coffee cost $1.60, how much will ¾ of a pound cost?

11. A tree is 72 feet high, which is 9 times the distance around it at the base. How many feet around the base?

12. Bought 12 yards of velvet at $3 a yard, and sold it at a gain of $24. What was the selling price a yard?

13. Paid $75 for 25 sheep, and soon after sold them at a gain of $25. How much was received for each?

14. Bought at one time 8 barrels of flour at $5 a barrel, and 4 barrels at $6 a barrel, and sold both lots so as to gain $20. What was the average selling price a barrel?

15. How much will be the wages for one year, if 4 months' **wages** amount to $48?

---

1. Divide 55367 by 23.

```
          2407, Quotient.
23)55367, Dividend.
   46
   —
   93
   92
   —
   167
   161
   —
    6, Rem.
```

TABLE OF MULTIPLES.

$$23 \times \begin{cases} 1 = 23 \\ 2 = 46 \\ 3 = 69 \\ 4 = 92 \\ 5 = 115 \\ 6 = 138 \\ 7 = 161 \\ 8 = 184 \\ 9 = 207 \end{cases}$$

PROOF.

```
  2407, Quotient.
    23, Divisor.
  ————
  7221
4814
————
55361
    6, Remainder.
————
55367 = Dividend.
```

When the products and remainders are so large that it is difficult to carry them in mind, they may be written as shown in the example here solved. This process is called "LONG DIVISION." The quotient may be written above or to the right of the dividend.

To avoid "guess-work" it will aid the pupil to make a table of multiples until he becomes familiar with the long division process.

The successive partial dividends in this example are 55, 93, 16, and 167. From the table it will be seen that there are two 23's in 55, four 23's in 93, no 23's in 16 (place a zero in the quotient and bring down the next figure of the dividend), and seven 23's in 167; after dividing all the figures of the dividend there is a remainder of 6.

PROOF : *The dividend always equals the product of the quotient and divisor, plus the remainder.*

2.	11)143	11)176	11)242	11)585	11)708
3.	12)156	12)192	12)385	12)518	12)930
4.	13)156	13)286	13)405	13)753	13)895

To Divide by 10, 100, or 1000.

Any integral number may be divided by 10, by 100, by 1000, etc., by pointing from the right of the dividend as many figures as there are ciphers in the divisor.

Thus, $2846 \div 10 = 284.6 = 284$ and 6 tenths.
        $2846 \div 100 = 28.46 = 28$ and 46 hundredths.
        $2846 \div 1000 = 2.846 = 2$ and 846 thousandths.

1. Divide 349 by 10.
2. Divide 867 by 10.
3. Divide 3468 by 100.
4. Divide 7962 by 100.
5. Divide 6459 by 100.
6. Divide 8678 by 100.
7. Divide 18469 by 100.
8. Divide 6984 by 100.
9. Divide 1649 by 100.
10. Divide 2564 by 1000.

If a divisor ends in one or more ciphers, point from the right of the dividend as many figures as there are ciphers on the right of the divisor; divide what is left of the dividend by the significant figures of the divisor. To the remainder, if any, annex the figures separated from the right of the dividend.

1. Divide 643 by 90.

PROCESS:
   $643 \div 90 = 64.3 \div 9 = 7$
   and 13 remainder.

2. Divide 7264 by 600.

PROCESS:
   $7264 \div 600 = 72.64 \div 6 = 12$
   and 64 remainder.

3. Divide 323 by 40.
4. Divide 457 by 50.
5. Divide 345 by 60.
6. Divide 8269 by 70.
7. Divide 3592 by 500.
8. Divide 18310 by 200.
9. Divide 45567 by 300.
10. Divide 538 by 200.
11. Divide 795 by 300.
12. Divide 946 by 400.
13. Divide 894 by 500.
14. Divide 3657 by 6000.
15. Divide 4289 by 7000.
16. Divide 5648 by 8000.

Divide each of the dividends given below, using as a divisor, one day 13, the next day 14, the third day 15, etc., to 20. Each pupil should make a table of multiples for each divisor. (If further practice of this kind should be desired, the teacher may assign as divisors, successively, 21, 22, 23, 24, etc.)

1.	65	73	94	89	47	56
2.	78	39	57	68	99	71
3.	63	87	76	96	46	85
4.	118	154	172	120	156	188
5.	213	237	248	253	269	293
6.	275	287	295	226	203	347
7.	3123	3234	3345	3456	3567	3785
8.	4678	5788	6879	7890	8901	8493
9.	9012	8123	7243	6542	5987	9648

10. If 17 cows are worth $816, what is one cow worth? How much are 48 cows worth?

11. If 18 acres of land are worth $3366, for how much per acre should it be sold so that $720 may be gained?

12. How many tons of coal at $9 a ton will pay for 84 thousand feet of lumber at $36 per thousand feet?

13. By selling 13 acres of land for $585. I lose $52. What is the cost per acre? Cost of 160 acres?

14. If 180216 square rods of land be divided equally among 12 men, what is the value of each man's share at $1.25 per square rod?

15. $\frac{1}{9}$ of $42075 is what a gentleman paid for a house and lot, which was $568 more than what he sold them for. How much was received for them?

1. Henry is 3 times as old as Mary. If her age is 12 years, what is the sum of their ages?

2. What will be the sum of their ages 8 years hence?

3. In a certain school there are 60 pupils. One fourth of them are boys. How many girls in the school? How many more girls than boys?

4. There are 84 cows and sheep in a field; one seventh are sheep. How many cows in the field? How many more cows than sheep in the field?

5. A man bought a horse and a wagon for $210. For the wagon he paid one third of the amount. What is the cost of the wagon? Of the horse? How much less did the wagon cost than the horse?

6. Mr. Stone paid $150 for a carriage and one third as much for a harness. Find the cost of the harness. Of both.

7. John has 75 cents and James has one third as much. How much money have both?

8. A has $8, B has twice as much, and C five times as much as A. What is the sum of their money?

9. Mr. Page bought a suit of clothes and overcoat for $56. Of this amount $\frac{3}{7}$ was paid for the overcoat. What did the overcoat cost? Find the cost of the suit.

10. If a sofa and table cost $35, and the table costs $\frac{2}{5}$ of that amount, what does the sofa cost?

11. A lot is worth $1200 and the house on it twice as much. Find the cost of the house. Of both.

12. 2 bushels are how many pecks? Quarts? Pints?

13. 160 pints are how many quarts? Pecks? Bushels?

14. 3 bushels 1 peck are how many pks. ? How many qts. ?

15. 12 pecks 5 quarts are how many qts. ? How many pts ?

16. 50 quarts 1 pint are how many pints?

1. A farmer sold a grocer 20 pounds of butter, at 18c. a pound; 17 dozen eggs, at 12c. a dozen; 9 bushels of potatoes, at 60c. a bushel; and received in payment 54 pounds of sugar, at 9c. a pound; and the remainder in rice, at 7c. a pound. How many pounds of rice did he get?

2. A gentleman owned $\frac{1}{12}$ of a tract of land of 12960 acres, and divided it equally among his 8 children. What is the value of each child's share, at $36 an acre?

3. A grain dealer delivered to a customer 3240 pounds of wheat. There are 60 pounds in one bushel. How many bushels did he deliver?

4. If 25 bushels of oats weigh 800 pounds, how many pounds will 75 bushels weigh? How many pounds will a carload of 536 bushels weigh?

5. A, B, and C bought a farm for $9580; A contributed $125 less than $\frac{1}{4}$ of the whole sum; B, $1584 more than $\frac{1}{5}$ of it; and C the remainder. How much did each one contribute?

6. Bought a tract of land and divided it into 22 house lots, which I sold at $348 each, thereby gaining $2912. What was the cost per lot?

7. B, C and D purchased 24 acres of land for $11880; B's share of it was 3 acres more than $\frac{1}{3}$ of it; C's share, 5 acres more than $\frac{1}{4}$ of it; and D's the remainder. How much did each one pay?

8. A sold to a merchant 2460 pounds of wool at 45c. a pound, 1840 pounds at 36c. a pound; received $219.40 cash, and the remainder in silk at $5 a yard. How many yards of silk did he receive?

9. $\frac{1}{20}$ of $(350 \times 204) - \frac{1}{18}$ of $(980 + 298) = ?$

REVIEW—WRITTEN.

1. Divide the number 25632 into equal parts of 18 units each. How many *parts* are there? Divide it so that there shall be 24 equal parts. How many *units* in each part?

2. A man sold 64 calves at $7 each, and 29 sheep at $13 each. He spent all the money, except $112, for 23 barrels of syrup. How much did 6 barrels cost him?

3. $\frac{5}{12}$ of $8400 equals in value how many $20 bills?

4. How many 14's in 75868? How many 23's?

5. The quotient is 2463, the divisor is 21 and the remainder is $\frac{1}{3}$ of the divisor? What is the dividend.

6. The product of two numbers is 9146, and one of the numbers is 17. What is the other?

---

7. How many 24's can be subtracted from 9547? What is the remainder?

8. A farmer sold 15 acres of land for $2070, and thereby gained $405. Find the cost per acre.

9. Mr. Monroe bought 19 cows for $526, after feeding them at an expense of $7 per head, he sold them for $792. Did he gain or lose, and how much on each cow?

10. A man sold 155 acres of land at $38 per acre, and took in payment for it 19 horses at $65 apiece, and 15 cows at $17 apiece. How much was still due him?

11. If a ship can sail 264 miles per day, how far can she sail in an hour?

12. A farmer purchased 320 acres of land. Retaining 296 acres, he sold the rest for $3072. How much did he get per acre?

13. How many days in 8760 hours?

GENERAL REVIEW.

1. $365 × 78 divided by $\frac{1}{7}$ of 161 = ?

2. What is the sum of the ages of 75 men each three score and ten years old?

3. Find the cost of 15 gross of buttons at $3.75 a dozen.

4. What is the length in feet of a sidewalk around a block having 225 yards on each side, allowing 6 ft. extra at each corner?

5. A person bought a barrel of sweet cider (31½ gal.) at 20c. a gallon, and sold it in ½ pt. glasses at 5c. a glass. How much did he gain?

6. Find $\frac{1}{18}$ of the sum of $856 × 35 and $100000 − $25675.

---

7. What cost 15396 qts. of berries at 53c. a pk.?

8. A fruit dealer bought 5 barrels of apples at $2.35 a barrel, each barrel containing 3 bu. He sold them at 35c. a peck. How much did he make?

9. A merchant, counting his money in the cash drawer, found that he had three $20 bills, eight $10 bills, twelve $5 bills, four $2 bills, seven $1 bills, 15 half dollars, 13 twenty-five cent pieces, 18 dimes, 25 five cent pieces, and 29 cents. How much money was in the drawer?

10. If a family uses 3 bu. 1 pk. of potatoes a month, what do the potatoes cost them at 23c. a peck?

11. A person paid $3320 for a lot, and $145 for improvements on it. He traded the lot for 25 horses. How much a head did the horses cost him?

12. A drover bought 245 sheep at $5 a head, and then sold 90 of them at $8 a head, 95 at $6 a head, and the rest at $5 a head. How much did he gain?

Dr.

1887.

April, 1887.

			$	c.
Apr	1	Cash on hand	125	60
"	2	Week's salary	18	00
"	7	Sold 4 oil barrels, @ 75c	3	00
"	9	Week's salary	18	00
"	12	Sold 16 chickens, @ 22c	3	52
"	15	Cash from White & Co	6	50
"	16	Sold 1 Jersey cow	42	00
"	16	Week's salary	18	00
"	23	" "	18	00
"	30	"	18	00
			270	62

May, 1887.

May	1	Cash on hand	167	38

Dr. Cr

1887.

April, 1887.

			$	c.
Apr.	1	House rent for April,	24	00
"	1	Grocer's bills, March,	21	65
"	1	Market " "	6	92
"	5	1 suit of clothes	15	50
"	6	1 load of hay	11	50
"	9	Dry goods	4	85
"	16	Dress-making	9	00
"	20	In charity	3	52
"	23	History of U. S.	6	30
"	30	Balance	167	38
			270	62

May, 1887.

May				

TABLE OF LINEAR (OR LONG) MEASURE.

12 inches (in.)	=	1 foot (ft.)
3 feet	=	1 yard (yd.)
5½ yards	=	1 rod (rd.)
16½ feet		
320 rods	=	1 mile (m.)

1. How many inches in 3 feet? 5 feet? 10 feet?
2. 48 inches equal how many feet? 144 inches?
3. What part of a foot is 6 inches? 4 inches? 8 inches?
4. A common door is 6 feet 8 inches high? What is the height of the door in inches?
5. A country road is usually 22 yards wide. How many feet wide is it?
6. 30 yards equal how many feet?
7. How many feet in 5 yards and 2 feet?
8. How many inches in 1 yard, 1 foot and 2 inches?
9. How many rods in $\frac{1}{4}$ of a mile? $\frac{1}{2}$ mile?
10. Two rods equal how many yards? 4 rods?
11. What is the cost of 6 feet of ribbon at 12c. a yard?
12. What is $\frac{1}{8}$ of a mile expressed in rods?
13. One eighth mile is sometimes called a *furlong*. How many rods in a furlong?
14. Two furlongs are what part of a mile?
15. How many miles in 40 furlongs?
16. At 10 cents a mile, what will it cost to convey a man 5½ miles and back again?
17. How much less than a mile did a man go, who walked 295 rods?
18. A boy, taking 8 steps to a rod, will take how many steps in walking one mile?

1. 5½ times 276 are how many?
   REMARK: *276 × 5, plus 276 ÷ 2 = the answer.*
2. How many yards in 28 rods? In 1 mile?
3. How many feet in 42 rods? In 320 rods?
4. In measuring the depth of the ocean, a unit 6 feet long, called *fathom*, is used. How many feet in 20 fathoms? In 40 fathoms?
5. Find the cost of 52 yards of rope, at 2¼c. a foot
6. What is the cost, at 9c. a foot, of a strip of border long enough to go around the walls of this room?
   REMARK: *One pupil may measure the room for the entire class and place the result on the board. Count parts less than 12 inches as one foot.*
7. Find the number of inches of wall between the doors and windows of this room. How many strips of paper 18 inches wide are required to paper the parts of the walls measured?
8. How many boards, 8 inches wide, are required to build a sidewalk in front of this school-yard?
9. How many steps, each 2 feet long, will a boy take in going 3 miles?
10. What is the cost for the tile, at 15c. a foot, to put into a drain 35 rods long?
11. What is the cost of paving a street, 45 rods long, at $6.50 a linear yard?
12. What is the price paid for a lot, having 22 yds. front, at $25 a foot?
13. A person bought a block of ground for $4752. The block was 396 feet wide. He divided it into 6 lots, which he sold at $22 a foot. How much did he gain by the transaction?

TABLE OF AVOIRDUPOIS WEIGHT.

16 ounces (oz.)   =   1 pound (lb.)

100 pounds   =   1 hundredweight (cwt.)

20 hundredweight = } 1 ton (T.)

2000 pounds   = }

This weight is commonly used in buying and selling articles. The unit is the *pound*.

1. How many ounces in 2 pounds? In 5 pounds?
2. How many oz. in $\frac{1}{2}$ lb.? In $\frac{1}{4}$ lb.? In $\frac{3}{4}$ lb.?
3. 32 oz. equal how many pounds? 24 oz.?
4. How many pounds in $\frac{1}{2}$ cwt.? In $\frac{1}{4}$ cwt.?
5. $\frac{1}{2}$ ton equals how many pounds? $\frac{1}{4}$ ton?
6. A teamster had a load of iron weighing 2 tons. How many pounds did the load weigh?
7. How many barrels of pork weigh a ton, there being 200 pounds in a barrel?
8. A keg of nails weighs 100 lbs.? How many kegs in a load weighing $1\frac{1}{2}$ tons?
9. A grocer weighs $1\frac{1}{2}$ lb. of butter. What weights does he use?
10. How many 4-oz. weights are required to weigh $1\frac{1}{4}$ lbs.? $\frac{3}{4}$ lb.? 2 lbs.?
11. What is the cost of 1 lb. 4 oz. of canary seed at 2 cents an oz.?
12. What is the value of 2 oz. of sunflower seed at 40c. a lb.?
13. 32 lbs. equal 1 bushel of oats. How many lbs. in 1 pk.? 1 qt.? In a sack holding 2 bu.?

1. 760 mills equal how many cents?
2. $35 and 45 dimes equal how many dimes?
3. A butcher bought a beef weighing 584 lbs., at an average price of 9c. a lb. Allowing 18 lbs. for waste, how much will he gain if he sells the meat at an average price of 12 cents a pound?
4. I bought a $\frac{1}{4}$ ton of millet seed for $20, and sold it at $5\frac{1}{2}$ cents a lb. Find the gain.
5. How many lbs. in 2 tons, 7 cwt. and 25 lbs.?
6. How many pounds in 3600 oz.? In 1256 ozs.?
7. Find the cost of 2 bu. 3 pks. of cherries at 7 cents a quart.
8. What cost 144 qts. of gooseberries at 50 cents a peck?
9. What is the value of a pint of alcohol at $2.40 a gallon?
10. What is the cost of $4\frac{3}{4}$ lbs. of cinnamon at 7c. an oz.?

11. Find the value of 5 lbs. 8 oz. of pepper at 20 cents a lb.?
12. A farmer sold 3 tubs of butter, weighing, respectively, 52 lbs. 8 oz.; 56 lbs. 10 oz., and 62 lbs. 14 oz., at 26c. a pound. What did he get for the butter?
13. A load of hay with the wagon weighs 2820 lbs. The wagon weighs 920 lbs. Find the value of the hay at 75c. a cwt.
14. If a man with a reaper cuts 7 acres a day, how long will it take him to cut 336 acres? How many men will it take to cut 336 acres in a week?
15. A merchant bought 9 pieces of cloth, each containing 40 yards. He sold the cloth for $5 a yard, and gained $450. What did he pay for the cloth?
16. A merchant exchanged 270 bbls. sugar at $22.50 per bbl. for flour at $5 per bbl. How many bbls. of flour did he receive? He sells the flour for $5.50 per bbl. How much does he gain?

1. If I buy nine four-cent stamps, and give, in payment, a 50c. piece, how much change should I receive?

2. A man hired 8 boys to do some work, agreeing to give them 5c. each. When he paid them he had a $2 bill, with which he stepped into a store and received the least number of pieces in change that would enable him to pay the boys. What and how many pieces did he receive?

3. I gave $1 in payment for 18 two-cent stamps. How much change should I receive?

4. I leave the school-house at half-past three in the afternoon and return in the morning at a quarter before nine. How many hours from the time I leave the school-house until I return?

5. There are 288 pages in a book. What are the two middle pages numbered? If the book has 288 leaves, what are the two middle pages numbered?

6. A boy earns $6 a week. What will he save at the end of 14 weeks, if he spends three weeks' earnings?

7. What is the postage at $\frac{1}{2}$c. an ounce on a package weighing 4 oz.? 1$\frac{1}{2}$ lbs.? 3 lbs.?

8. If a man buys old iron at $\frac{1}{2}$c. a pound, how much will he pay for 86 lbs.? For 240 lbs.?

9. I hired a dozen boys to do a certain work, agreeing to give them 15 cents each. When I paid them, what pieces of money did I need, and how many of each?

10. A street car, going "down," carried 25 passengers, and going "up," 45. How much fare, at 5 cents each, was collected on the round trip?

11. A block of houses is 240 yards long and 200 yards wide. How far does a boy go who walks around it?

12. 50c. less the cost of 18 pencils at 2c. each equals what?

1. A fruit dealer sold 25 barrels of nuts, each containing 3 bushels, at $8 a bushel, and gained $75. What was the cost per barrel?

2. A farmer picked from one tree 8 pecks of apples; if he has 13 trees bearing the same quantity of apples, how many barrels can be filled from them, allowing 3 bushels to one barrel? How many bushels remainder?

3. 25 cattle were found to weigh 9925 pounds. If they were of equal weight, how much more are 17 of them worth at 5c. a pound, than the remainder at 7c. a pound?

4. A miller earns $4.50 a day, and his expenses are $92 a month. How many months, counting 26 days to the month, will it take him to pay for a horse and wagon worth $136, and a mortgage on his house of $464?

5. A colony of 121 persons contribute $945 each towards the purchase of land. How many acres, at $21 an acre, can they buy?

6. A brickmaker has 3 kilns, one of which contains 36520 bricks, and each of the others $\frac{1}{4}$ as many; after disposing of 40380 bricks, he sold the remainder in 18 loads. How many bricks are there in each load?

7. Find the product of the sum and difference of four thousand ninety, and eight hundred seventy, and divide it by 19.

8. Two drovers have each 954 sheep, costing $7 a head; one of them sold his at a loss of $1 a head, and the other sold his at a gain of $2 a head. How many sheep, valued at $15 a head, can they jointly buy with the proceeds of the sale?

9. If 260 acres of land cost $4160, what will 327 acres cost at the same rate?

SEE TABLES IN APPENDIX.

1. Find the cost of 50 ft. of rope, at 4 cents a foot.
2. What cost 8 yds. calico, at 12½ cents a yard?
3. Find the cost of 2 gal. of alcohol, at 60 cents a quart?
4. If 9 square yards of carpet cost $18, what is the cost of 20 square yards?
5. What is the cost of 15 lbs. of sugar, if 12 lbs. cost 96 cents?
6. What is the cost of 12 bu. oats, if 5 bu. cost $2.00?
7. If 4 yds. of cloth cost $16, what is the cost of 9 yds. at the same rate?
8. If 20 gal. wine are worth $10, what is the value of 17 gal. of the same article?
9. If 15 cords of wood are worth $45, what is the value of 11 cords?
10. Cost of 5 cwt. of flour, if 12 cwt. cost $48?
11. What is the cost of 3 bu. corn, at 10c. per pk.?
12. What is the cost of 4 bu. wheat, at 20c. per pk.?
13. What is the cost of 5 pk. of potatoes, at 3c. per qt.?
14. Cost of 2 lbs. cinnamon, at 10c. per oz.?
15. Cost of 2 T. iron, at $3 per cwt.?
16. Cost of 9 yds. cord, at 3c. per foot?
17. Cost of 1 hhd. wine, at $2 per gal.?
18. Cost of 2 bbls. vinegar, at 20c. per gal.?
19. Cost of 4 gals. milk, at 5c. per qt.?
20. Cost of 3 lbs. honey, at 2c. per oz.?
21. Cost of 4 oz. sago, at 12c. per lb.?
22. Cost of half a dozen thimbles, worth 72c. a gross?
23. At 80c. a gal., what is the value of 1 qt. of syrup?
24. What is the cost of grading 80 rods of road at $160 a mile?
25. Find the cost of 18 yds. silk, at $3 per yd.
26. What is the rent of a house, a year, at $20 per month?

SEE TABLES IN APPENDIX.

1. Find cost of 30 bu. of beans, at 45c. per pk.
2. Find cost of 21 gals. cider, at 4c. per qt.
3. Find cost of 3 tons nails, at 3c. per lb.
4. Find the total weight in pounds, of:
    3 kegs (100 lbs. each) of nails.
    25 barrels of flour.
    5 tons of iron and 2 tons of lead.
5. How many feet in 2 miles?
6. If 1 cwt. of metal costs $5, how much will 2 tons cost?
7. If one pound of butter is worth 28c., what is the value of 5 tubs weighing, respectively, 54 lbs. 3 oz., 48 lbs. 5 oz., 61 lbs. 9 oz., 56 lbs. 4 oz., and 51 lbs. 3 oz.?
8. Find the cost of 12 bu. 3 qts. of peas, at 8c. a quart.
9. What is the cost of 40 rods of sewer pipe, at $1.25 a foot?
10. At 18 cents a foot, how many yards of lead pipe can be purchased for $138.24?

11. How many years will it take a man to save $2880, if he save $24 a month?
12. How long will a barrel of oil, containing 51 gallons, last, if a quart be burned every day?
13. What is the value of 1½ tons sugar, at 6c. a pound? What is gained by selling it at 7½c. a lb.?
14. What is the cost of forty-eight 112-lb. kegs of pearl barley, at 7c. a pound?
15. Find the cost of 9 bbls. of oatmeal, each containing 200 lbs., at 5c. a lb.
16. What is the value of 250 lbs. rice, at 5½c. a lb.
17. What is the cost of 150 pails lard, at 35c. a pail?
18. What is the cost of 145 6-lb. cans of meat, at 9c. a lb?

1. I pay for room rent $3 a month, and for office rent $9 a month. What rent do I pay in a year?

2. What 5 equal numbers make 75?

3. If it requires 64 rods of fence to go around a square lot, how many rods on one side of the lot?

4. If there are 29 lbs. on one scale pan, and 15 lbs. on the other, how many pounds must be taken from one pan and put into the other to make the scales balance?

5. John's kite string is 112 yards long, and Henry's is 84 yards long. How much of his string must John give to Henry so that both strings may be equal?

6. The sidewalk in front of our lot is 3 times as long as that of our neighbor; and both are 400 feet in length. Find the length of each sidewalk.

7. Mr. Jones bought a turkey, weighing 15 lbs., at 11c. a pound. What was the cost of the turkey?

8. How much change should Mr. Jones receive if he gave a $2 bill in payment for the turkey?

9. How much change would he have received had the turkey weighed 2 pounds more?

10. A bushel of wheat weighs 60 pounds. What will 8 bushels weigh? What is the cost of that amount at 90c. a bushel?

11. How many oranges, worth 4 cents each, must be given for 13 lemons, worth 3 cents each?

12. How many pounds of fish, worth 7 cents a pound, can be purchased for $1.05?

13. 164 marbles were equally divided among a certain number of boys. How many boys were there, if each received 4 marbles?

14. If 15 sheep cost $75, what will 25 sheep cost?

15. If 8 tons of hay cost $112, what will $\frac{1}{2}$ ton cost?

Find the amount under each account; find, also, the amount of the five accounts:

1. PRODUCE.

        546 lbs. creamery butter, at 26c. a lb. -   - $...............
        743 lbs. dairy butter, at 19c. a lb.   -   -   ....
        336 lbs. cream cheese, at 14½c. a lb. -   -   ....
        88 doz. fresh laid eggs, at 23c. a doz.   -   ....

2. GREEN FRUITS.

        25 boxes Messina lemons, at $3.55 a box,   - $...............
        18 boxes Mexico oranges, at $5.50 a box, -   ....
        63 bbls. Malaga grapes, at $6.45 a bbl. -   - ....
        84 bunches bananas, at $2.75 a bunch,   -   ....

3. FLOUR AND FEED.

        356 bbls. patent flour, at $4.60 a bbl. -   - $...............
        678 bbls. bakers' flour, at $3.70 a bbl.   -   ....
        952 bags bran, at 85c. a bag, -   -   -   - ....
        446 bags corn meal, at $1.36 a bag, -   -   ....

4. BOOTS AND SHOES.

        48 pairs kip boots, at $2.85 a pair,   -   - $...............
        165 pairs calf shoes, at $3.30 a pair, -   - ....
        185 pairs kid shoes, at $2.95 a pair,   -   - ....
        230 pairs slippers, at $1.25 a pair. -   -   ....

5. GRAIN.

        3675 bu. winter wheat, at 93c. a bu.   -   - $...............
        5400 bu. spring wheat, at 87c. a bu. -   -   ....
        6548 bu. corn, at 38½c. a bu. -   -   -   - ....
        7777 bu. oats, at 28c. a bu.   -   -   -   ....

1. How many $20 bills make $100? $1000?
2. How many cows at $50 each can be bought for $1000?
3. If it takes 22 yards of silk to make a dress, how many yards in a piece of goods from which 4 dresses can be sold? What is the value at $2 a yard?
4. How many $5 bills are required to pay a debt of $455?
5. A person sold 9 sheep for $65 and thereby gained $11. What did the sheep cost him per head?
6. A boy picking cherries filled a bushel basket and a half bushel measure. How much money was he paid for picking them at 15c. a peck?
7. What are the cherries worth at 10c. a quart?
8. How many pies could be made of the cherries if a pint of cherries be used to a pie?
9. What would the pies be worth at 20c. each?
10. I bought a 2 bushel sack full of beans at $1.80 a bu. What was the cost?
11. What are the beans worth at 50c. a peck?
12. Find the value of the beans at 10c. a quart.
13. I bought 4 boxes of toilet soap at 30c. a box. Find the cost.
14. What is the value of the soap at 12c. a cake, if each box contained three cakes?
15. What cost 2 quarts of beans, at 6c. a pint?

At sight read the following as pecks; also as quarts:

16. 2 bushels, 5 bushels, 10 bushels, 1½ bushels, 2½ bushels.

Read the following as cents; also as mills:

17. $3, $5, $8, $10, $15, $2½, $3¼, $7¾.

18.

$12	$24	$2.40	$12.20	$32.80
3	4	8	2	8

Find the amounts of the following sales:

1. 36 cattle, average weight 1247 lbs., at 4c. a lb.
2. 48 cows, average weight 1010 lbs., at 2½c. a lb.
3. 28 cows, average weight 904 lbs., at 2½c. a lb.
4. 89 cows, average weight 972 lbs., at 3½c. a lb.
5. 95 oxen, average weight 912 lbs., at 3½c. a lb.
6. 88 cattle, average weight 1142 lbs., at 4c. a lb.
7. 97 cattle, average weight 1386 lbs., at 4½c. a lb.
8. 47 cattle, average weight 1534 lbs., at 5c. a lb.
9. 18 calves, average weight 152 lbs., at 6c. a lb.
10. 15 calves, average weight 148 lbs., at 6½c. a lb.
11. Find the total of the 10 sales given above.

12. 3121 bu. No. 2 white wheat, at 79c. a bu.
13. 383 bu. No. 4 white wheat, at 74c. a bu.
14. 2190 bu. No. 2 long red wheat, at 75c. a bu.
15. 4684 bu. No. 1 Turkish wheat, at 76c. a bu.
16. 63968 bu. No. 2 Turkish wheat, at 77c. a bu.
17. 24384 bu. No. 1 red wheat, at 75½c. a bu.
18. 1,479,818 bu. No. 2 red wheat, at 74c. a bu.
19. 89572 bu. No. 3 red wheat, at 73c. a bu.
20. 17530 bu. No. 4 red wheat, at 69c. a bu.
21. 11,479,024 bu. No. 2 spring wheat, at 74c. a bu.
22. Find the total number of bushels, and the value.

23. No. 2 yellow corn, 751917 bu., at 37c. a bu.
24. No. 3 yellow corn, 136343 bu., at 35c. a bu.
25. No. 2 white corn, 209426 bu., at 36c. a bu.
26. No. 2 white oats, 25586 bu., at 29c. a bu.
27. No. 2 mixed oats, 1,022,693 bu., at 27c. a bu.
28. Find the total number of bushels, and the value.

EXAMINATION—WRITTEN.

1. Add sixty thousand forty, 101 thousand 806, 7 million 7 thousand 7, 723 million, 206 thousand nine hundred 75, 60109, 648382 and 1046.
2. $(\frac{3}{7}$ of $447594)+(\frac{1}{9}$ of $59265)=?$
3. If $\frac{1}{4}$ of an acre of ground cost $76 what will 19 acres of the same cost?
4. How much more will 26 horses cost at $135.75 apiece than 35 cows at $18.25 apiece?
5. What will 2 bushels of potatoes cost, if $\frac{1}{2}$ peck is worth 45 cents?
6. Dividend 86,039,726, divisor 23.   Find the quotient.
7. How many pounds in 48992 oz.?
8. How many pts. in 97 pecks?

9. What will 253 lbs. of butter cost, at $2\frac{1}{2}$ cents an oz.?
10. If a grocery bill is 83.12\frac{1}{2}$, how much change should be returned for a $100 bill given in payment?
11. A man bought 96 gal. of oil at $0.90 a gal.   After using $\frac{1}{3}$ of it he sells the remainder at 35 cents a quart. Find his gain or loss.
12. Find the cost of 960 qts. at $0.30 a gal, and 480 quarts at $0.70 a pk.
13. 12 miles of grading at $82.75 a rod equal what?
14. In an ordinary wagon box are 24 bushels of wheat.   What is the value of the wheat at $2\frac{1}{2}$ cents a quart?
15. On one side of a certain street there are 275 trees; on the other side are one fifth less.   How many trees on both sides of the street?
16. By what number must 19 be multiplied to make the product 10982?